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THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Minutes and Notes- July, 1941- Los Angeles, Calif.

The Conchological Club of Southern California met at the Los Angeles Museum in Exposition Park, Los Angeles, Calif. on July 1,1941 at 7:30 P.M. The meeting was presided over in the absense of the president by the vice--president, Mr. George Willett.

After three corrections (1) Acmaea triangularis, (2) Bauman instead of Sauman on P.1, p2 and(3) Systematics line 2 p4,p2 the minutes of the previous meeting were approved.

The picnic of June 29 at the Burch Lath House was reported as a great success with an attendance of 44, abundance of good food, plenty of interesting material for study and a fine day. A unanimous vote of thanks was tendered the hosts by the club.

Two immense Olive- like fossils were shown by Mr. W. C. Marsh. They were collected from what must have been a very old exposure near Orange County Park. No one present could classify them.

Dr. W. Gregg's place on the program was filled in his absense by the Chaces whom we were all glad to have with us again after several months absense.

Mr. E.P. Chace reported on marine collecting at Monterey and vicinity. He had a teble full of specimens to show for his labor almost any one of which would be welcome additions to any of our collections. He gave detailed instructions as to where and when to look for the several species which will be a great help to any club member who succeeds in getting that far from home. He had so many things to report that some of us had difficulty in keeping pace with him.

Mrs. E.P. Chace reported on the land shells and while her list of species was shorter than her husband's, the names on them were so much longer that the balance must have been about even. She certainly exhibited some beautiful shells- several quite rare ones- and some found in considerable quantities.

These two reports used up all the available time so John Burch's serial report on " How, When and Where to Collect Local Shells" was crowded out to be resumed we hope at a later meeting.

The meeting was then adjourned.

Effie H. Clark, Secretary.

2

Minutes and Notes- August,1941- Los Angeles, Calif.

The Conchological Club of Southern California met at the Los Angeles Museum in Exposition Park, Los Angeles, Calif. Tues. Aug. 5,1941 at 7:30 P.M. with 31 persons present 7 of whom were visitors. In the absense of the president, the vice-president Mr. George Willett presided.

There were no reports from the standing committees.

A card was read from H. Carroll McGowan reporting improvement in health.

The paper of the evening was presented by Mr. and Mrs. Fred Barnett. It's title was " Collecting in Alamitos Bay" and proved to be a novel and delightful one.

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It was illustrated by pictures in color, many of them of small species magnified which was quite an innovation for non professionals. The running comments on the pictures were witty and illuminating making it a paper that will long be vividly remembered. Those who saw the picture and who had also attended the " Lath House Picnic" (which was most of us) had a chance to " see themselves as others see them". The " good night " picture of the Barnett's young son was a lovely ending indeed for what was a remarkable paper.

Effie M. Clark, Secretary

Minutes and Notes- September 1941- Los Angeles, Calif.

The Conchological Club of Southern California met at the Los Angeles Museum in Exposition Park, Los Angeles, Calif. Tues. Sept. 2, 1941 at 7:30 P.M.

We were glad to have with us again after several months absense Dr. W.O. Gregg.

The secretary reported a change of address to 403 S. Mariposa St., Los Angeles.

A unanimous vote of thanks was tendered Mr. and Mrs. J.C. Marsh for their labor in preparing and printing the " Notes" for the past two years.

Since no reports were forthcoming from the standing committees the paper scheduled was given by Mrs. Mary Borman her subject being " Tide Pool Collecting."

Her modest account of her exploits was hardly in accordance with her very beautifully prepared specimens she had to exhibit. Her excuse, as if one were needed, for the artistic arrangement of her shells was that these shells were often used as reference material by material by High School beginners in shell collecting. So they desired to make them attractive so as to arouse the interest of the young collectors. It would be hard to immagine a better service any conchologist could give to a beloved study.

Two of their most beautiful sets were a tray of Chama of ex--quisite coloring and a large set of Hinnites gigantea rivaling Spondylus in their intricate decorative spines which were most beautifully colored.

Another chapter of John Burch's " How, When and Where to Collect Local Shells" was given and discussion by other collectors was given. The meeting was then adjourned.

Effie M. Clark, Secretary.

#3

All members are urged to be present at the meeting to be held Tuesday, Oct. 7. A large attendance is expected to enjoy a talk on the " Non marine Molluscan Fauna of Southern California " by Dr. W.O. Gregg and " Fossil Mollusca of Ellsmere Canyon " by E.V. Edmonds.

Letters have been received from several collectors who attended the recent meeting of the American Malacological Union in Maine. Mr. D.L. Emery of St. Petersburg, Florida, Dr. B.R. Bales of Circleville, Ohio and Mr. and Mrs. F.K. Hadley of Malden, Mass. all report a very successful meeting.

Tom Burch is now Laboratory Assistant in Zoology at the University of Southern California while working for his Master's Degree on " Fouling of Ship's Bottoms."

Mr. Sprague, our enthusiastic collector from Santa Ana has been on an extended collecting trip along the coast of British Columbia. Several of the members are hoping to be the first to see him on his return and share some of the loot.

There are some fair collecting tides this month. They are not as deep as the November and December tides but may be recommended for bay collecting. Some Cypraea are already appearing and one good catch reported from along the Palos Verdes Estates.

Sat.	Oct.	18	1:33 P.M.	plus	0.3
Sun.	Oct.	19	2:15 P.M.	minus	0.2
Mon.	Oct.	20	3:00 P.M.	"	0.6
Tue.	Oct.	21	3:46 P.M.	"	0.8
Wed.	Oct.	22	4:37 P.M.	"	0.7

Mr. and Mrs. George Willett have just returned from an interesting trip to Denver where they attended the American Ornithology meeting.

The current issue of Natural History, The Magazine of the American Museum of Natural History, New York contains a very interesting article on the Polynesian pearl divers in which there are some remarkable pictures and descriptions of the giant Tridacnas and other mollusks. The author is Roy Waldo Miner, curator of invertebrates.

The June-July issue of Nature Magazine contains an article entitled " Conchs" by Ivan Tomkins. However, the author is not a shell collector. He opens with the comment " Conchologists are peculiar people for they throw away the animal and worship the remains ".

The August-September issue of Nature Magazine contains a beautifully illustrated article on the fossils of the South Dakota Badlands in which there are figures and descriptions of Scaphites and other fossil Cephalopods.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Called to order by the president, Tom Burch, the Conchological Club convened at the usual time and place Oct. 7,1941 with 32 present.Three of these were visitors who expressed a desire to become members-Beatrice LaRue,3814 S. Hill St., Los Angeles, Mrs. Carrie B. Robinson and Mr. Truman Robinson,1108 Bay View Drive, Manhattan Beach,Calif.

The minutes of the last meeting were approved as printed in the notes, which were kindly mimeographed by Mr. and Mrs. Burch in response to many requests by those unable to be present that the notes be continued. It was moved, seconded and unanimously carried that Mr. and Mrs. Burch be reimbursed for postage and material used in the preparation and distribution of the notes.

No reports from standing committees being given, a nominating committee was appointed to submit candidates for election of officers at the next club meeting. The members of the committee are Mr. George Willett, Mr. Morris E. Caruthers and Mrs. E.P. Chace.

Report was made of the occurance of Helix aperta in numbers sufficient to constitute a menace to agriculture in San Diego, and members are asked to look out for them in this vicinity.

It was suggested by a member that since many of us have duplicate material but not in sufficient quantity for all members that each of us bring one or more sets properly named to be given as door prizes. The idea was favorably received and will be tried out at the November meeting.

The first paper of the evening was by Mr. E.V. Edmonds whose activity in defense work has made attendance impossible for some months. His subject was " Fossils Collected at Val Verde,Calif. ". This is a fossil field so far unreported by members of the club. The location is in Los Angeles County Park on the Ventura Road 3 miles west of the Richfield Tower at Castaic and then two miles up the canyon to a rather more accessible place than is afforded by most fossil outcrops. He had, as evidence of his industry, 25 identified species and two as yet unclassified.

Due to moving which rather jarred her from her material the secretary was glad to give way to Dr. W.O. Gregg, who gave his paper originally skeduled for the July meeting. It was good indeed.

To those of us who find so few of these shells and have so much trouble finding names for them it seems incredible that such beautiful shells are so rare in our collections. They are so hard to find , and the road to their identification when we do find them is indeed uphill for descriptions are scarse, scattered and expensive. We are proud to have in our membership so many who do know them and are so willing to help us name our rare " finds".

After considerable discussion and examination of material, the meeting was adjourned. Effie M. Clark, Secretary.

The Long Beach Shell Club held a picnic and collecting party at Dana Point on Sunday, Oct. 19. Mr. and Mrs. Fred Barnett were hosts to the members and dinner was enjoyed in their cabin after a successful afternoon of collecting. Several fine Murex trialata Sby. were taken. Mr. E.P. Chace took some very interesting specimens of Lamellaria as yet not definitely classified to species. Ischnochiton regularis Carpenter was another interesting find as well as several other rare chitons. The collecting was generally good.

No. 101,Vol. XXVII of Bulletins of American Paleontology has just been received. This is the second paper on " New Mollusca from the Pleistocene of San Pedro, Calif." by Dr. S. Stillman Berry and contains descriptions of 7 new species from the Hilltop Quarry. One of these species is Moniliopsis chacei Berry named in honor of our member Mr. Emery Chace.

It is with great pleasure that we learn of the return of Dr. Howard R. Hill to his former desk at the Los Angeles Museum. We sincerely trust that there will be no more interference with his department and that students will continue to enjoy the priviledge of working on their conchological problems under the able guidance and assistance of Dr. Hill.

Mr. George Willett will have the program for the November meeting which is assurance of a fine lesson for the sincere student of shells. The annual election of officers will also be held.

Among the recently published books on conchology received at the Los Angeles Museum is Bulletin 166 of the Bernice P. Bishop Museum, Parts 3 and 4 of " Zonitid Snails From Pacific Islands". The earlier publications in this series are Bulletin 165 in 1940 and Bulletin 158 in 1938. Two other books published by the Bishop Museum should be in the library of any student of the fauna of the Hawaiian Islands. They are : " A Manual of the Recent and Fossil Marine Pelecypod Mollusks of the Hawaiian Islands" and " Check List of Hawaiian Land and Fresh Water Mollusca".

TIDES

Nov. 5	4:02	P.M.	zero	0.0
Nov. 6	4:36	P.M.	plus	0.1
Nov. 7	5:15	P.M.	plus	0.3
Nov.15	12:40	P.M.	plus	0.6
Nov.16	1:22	P.M.	minus	0.2
Nov. 17	2:06	P.M.	"	0.8
Nov. 18	2:52	P.M.	"	1.2
Nov. 19	3:39	P.M.	"	1.3
Nov. 20	4:29	P.M.	"	1.2
Nov. 21	5:22	P.M.	"	1.0
Nov. 29	1:13	P.M.	plus	0.5
Nov. 30	1:47	P.M.	"	0.2
Dec. 1	2:19	P.M.	minus	0.1
Dec. 2	2:49	P.M.	"	0.3

It should be remembered that these tides are approximately an hour later in Newport Bay and an hour and a half later in Morro Bay.

NOTES ON NON-MARINE MOLLUSKS OF SOUTHERN CALIFORNIA

By Dr. W.O. Gregg

The nomenclature of our land and fresh water shells has undergone many changes in the last few years. An effort will be made to list a few of the more important ones with notes on identification and distribution. Typical Helminthoglypta tudiculata tudiculata Binney appears to be found only in restricted areas in San Diego County. It is distinguished from other forms of tudiculata by its large size,its coarser and heavier maleation. H. tudiculata angelena Berry is smaller and has lighter maleation. It is the commoner and widely distributed form found from San Diego County north to Ventura County and east into San Bernardino and Riverside Counties. Helminthoglypta tudiculata imperforata Pilsbry is characterized by lighter maleation entirely absent over portions of some specimens, and by its imperforate or nearly imperforate umbilicus . It is reported from Claremont, near Ontario and from Whitewater Canyon. Helminthoglypta tudiculata subdola Hemphill is found in sporadic colonies in Riverside County and in adjacent parts of Orange and San Bernardino Counties. It is distinguished by its lighter maleation and its more open umbilicus.

The Glyptostoma from Los Angeles County is distinct from the Lower California G. newberryanum depressum Bryant. Our species should be called Glyptostoma gabrielense Pilsbry. It is found in canyons on the south side of the San Gabriel range,also in the Elysian and Dominguez Hills. According to Berry an anatomical difference exists between the Dominguez and the San Gabriel snails. If this difference is constant the Dominguez snails should be called Glyptostoma gabrielense binneyanum Berry.

The little shiny brown introduced snails so common about nurseries and greenhouses now bear the generic name Oxychilus. O. cellarius Muller is the commonest of these. It is larger than Zonitoides arboreus Say and has more rapidly expanding whorls. Oxychilus alliarius Muller is somewhat smaller than O. cellarius. When alive it can be distinguished by the distinctly garlic-like odor which it gives off, particularly when disturbed. Oxychilus draparnaldi Beck is conspicuously larger than O. cellarius.

The common native slug of this region is Deroceras gracile Raf. For years it was known as Agriolimax campestris Binney.

It is doubtful that we have more than three different Succineas: Succinea oregonensis Lea , S. avara Say,and S. sillimani Bland. Succinea rusticana Gould has proven to be a synonym of S. oregonensis.

We probably have but one Physa locally, Physa osculans Hald.

Our Anadonta found in streams and various park lakes is Anadonta californiensis Lea.

Last Sept. 6 and 7 , our members Mr. and Mrs. J.C. Marsh and Mr. and Mrs. W.C. Marsh staged a Paleontological Exhibition at Cactus Manor, 6719 11th Ave. The showing was such a decided success that we are all looking forward to the next exhibit which will contain 50 additional glass cases and will show specimens representing every period. The Marshes exhibited 1579 specimens in glass covered cases.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

The Conchological Club of Southern California met as usual at the Los Angeles Museum, Nov. 4,1941.

The meeting, in the absense of the president,Tom Burch, was presided over by vice-president George Willett. There were 21 members present and one visitor, E.A. Lannice, who is a grand daughter of one of our charter members, and who brought a historic shell collected by her grandfather on Catalina Island and for many years one of but two or three known. It is still a very rare shell and bears the name Tegula regina Stearns (1893) but has been known by other names.

The minutes of the previous meeting were approved with the correction of line 6, paragraph 10 to read Lepidochiton raymondi Pilsbry.

The nomenclature committee reported two articles in the October Nautilus contributed by members of the club; " Notes on Epitonium" by A.M. Strong and " A Survey of West American Aligenas " by Tom Burch, the name of the new shell being Aligena redondoensis Burch. It is a tiny polycypod dredged from 75 ftms. off Redondo Beach at Burch station # 3833. The new Epitonium described by Mr. Strong is Epitonium tinctum bormanni Strong named in honor of Mr. and Mrs. Ralph Bormann of Long Beach who first collected the species.

It being election night the committee on nominations submitted the following names:

President- John Q. Burch
Vice-president- E.P. Baker
Sec. Treas.- Mrs. Effie M. Clark

It was moved, seconded and carried that nominations be closed and that the ballot be cast as recommended by the committee.

A considerable number of duplicate specimens were contributed by various members and enthusiastically received by those whose collections were lacking these shells.

George Willett then gave his talk on " California Desert Snails " which was indeed an instructive one since the extensive travels he and Mrs. Willett have taken to find them, and the fine sets he has gotten together and his familiarity with the subject made listening to his talk a delightful experience even to those of us who have not had the opportunity to get many of these elusive little animals.

Following this talk, John Burch, took up his serial story of " How, When and Where to Collect " and used up the remaining time listing collecting places of the various species and discussing them with other collectors. This series of talks is proving most worth while to the newer collectors especially and interesting to us all.

The meeting then adjourned.

Mrs. Effie M. Clark- Secy.

Treasurer's Report- 1941

Jan. Balance on hand	Bal. $10.28
Received dues $3.50	13.78
Paid J.C. Marsh $3.00	10.78
Feb. dues received $3.25	14.03
Paid J.C. Marsh .75	13.28
March dues received .25¢	13.53
April dues received 50¢	14.03
May dues received 50¢	14.53
June dues received $1.00	15.53
July- Paid J.C. Marsh $1.50 and Burch 40¢	13.68
August dues received 25¢	13.88
Paid Burch $5.00	8.88

Balance on hand $8.88

Mrs. Effie M. Clark-Treasurer

All members and friends are urged to send all news about shell collectors or shells to Mr. or Mrs. John Q. Burch, 1611 S. Elena Ave., Redondo Beach, Calif.

We were saddened by the death of Mrs. F.R. Aldrich of Balboa on Nov. 11 and extend our deepest sympathy to her husband. Mr. and Mrs. Aldrich have both been members of the Conchological Club for many years.

Mrs. Louise Sherrod, wife of Sterling T. Sherrod passed away Nov. 22 after several months of illness. Mrs. Sherrod was one of the charter members of the Long Beach Shell Club and was one of the most enthusiastic conchologists in Southern California. We all share in the grief of her family.

TIDES

The December tides are the best of the year and collectors should plan to take every advantage of them. It should be remembered that these tides are approximately an hour later in Newport Bay and an hour and a half later in Morro Bay.

Dec. 3	3:19 P.M.	minus	0.4
Dec. 4	3:50 P.M.	"	0.4
Dec. 5	4:23 P.M.	"	0.3
Dec. 6	4:58 P.M.	"	0.2
Dec.14	12:30 P.M.	plus	0.2
Dec.15	1:16 P.M.	minus	0.5
Dec.16	2:00 P.M.	"	1.1
Dec.17	2:46 P.M.	"	1.5
Dec.18	3 :31 P.M.	"	1.6
Dec.19	4:17 P.M.	"	1.5
Dec.20	5:03 P.M.	"	1.2
Dec.28	1:00 P.M.	plus	0.5
Dec.29	1:35 P.M.	"	0.1
Dec.30	2:07 P.M.	minus	0.2
Dec.31	2:37 P.M.	"	0.4

Johnsonia is the title of a new series of publications dealing with the marine shells of the east coast of the Americas from Greenland to Patagonia. The plan is to publish this by genera, each genus to contain all of the species known to occur in this area. The cost per genus will depend upon the number of pages included in each. The first number is on the genus Strombus, 16 qto. pages, 40¢. Orders may be sent to Dr. Wm. J. Clench, Museum of Comparative Zoology, Harvard College, Cambridge, Mass.

CALIFORNIA DESERT LAND SNAILS

by George Willett

California Eremariontas-Genus Micrarionta

M. rowelli (Newc.).- Tinajas Altas, Ariz.
r. hutsoni (Clapp). -- Dome Rock Mts.,near Quartzsite, Ariz.
r. desertorum P. & F. -- N. end Dome Rock Mts.
r. acus Pils. -- Near Needles, Calif.
r. bakerensis Pils. & Lowe -- Near Baker, Calif.
r. amboiana Willett -- Bristol Mts., near Amboy, Calif.
r.unifasciata Willett plus hilli W.-- Newberry Springs, thru Bullion, Sheep Hole,Coxcomb Mts.,Calif. plus- r. granitensis Willett
r. mccoiana Willett-- McCoy Mts., Riverside Co., Calif.
r. chuckwallana Willett-- N. end Chuckwalla Mts., Riverside Co., Calif.
r. chocolata WillettO Beal Well, Chocolate Mts., Calif.
M. immaculata Willett- Riverside Mts., Calif.
M. millepalmarum Berry-- Indio and Mecca hills, Riverside Co., Calif.
M. brunnea Willett-- S. end Chuckwalla Mts.,Riverside Co., Calif.
M. melanopylon Berry-- Black Rock Hills, San Bernardino Co., Calif.
M. argus Edson-- Argus Mts.;Slate Range
M. indioensis wolcottiana (Bartsch)-- E. San Jacinto Mts.,Calif.
i. indioensis (Yates)- plus cathedralis Willett- E. & SE Sta. Rosas.
i.callinepius Berry- SW Santa Rosa Mts., San Diego Co.
i. xerophila Berry - NE Santa Rosa Mts., near edge of desert floor
i. remota Willett- Borego Mt., San Diego Co.
M. morongoana Berry- NW Little San Bernardino Mts., Calif.
M. baileyi (Bartsch)-- S. Nopah Mts., Inyo Co., Calif.
M. avawatzica Berry- Avawatz Mts., San Bernardino Co., Calif.
a. eremita Pils.-- SW Panamint Mts., Inyo Co., Calif.
M. rixfordi Pils. plus actotis Berry plus depressispira Berry- Eastern Little San Bernardino Mts., to Eagle Mts.
M. borregoensis Berry- San Ysidro Mts., San Diego Co., Calif.
M. harperi (Bryant)- San Jacinto Mts.
h. orcuttiana Bartsch-S. end Laguna Mts., San Diego & Imperial counties,Calif.
M. ora Willett- Vallecitos and NE side of Lagunas
o.carrizoensis Willett--Carrizo Mt., Imperial Co., Calif.
M. micrometallous Berry- El Paso Mts., Kern Co., Calif.
M. aquaealbae Berry- S. end San Bernardino Mts. & N. side San Jacintos(nr Cabezon)

Desert Helminthoglypta

H. jaegeri Berry- Ord Mts., San Bernardino Co., Calif.
H. crotalina Berry- N. & E. sides Granite Mts., San Bernardino Co.
H. graniticola Berry- S. & W. sides Granite Mts., "
g. arida Pils. & Field- E. side Mojave R. near Oro Grande.
H. mohaveana Berry plus riparia Berry-- Both sides Mojave above Victorville, and W. side of river above Oro Grande bridge.
H. fontiphila Gregg-- NE San Gabriels, Soledad Canyon to Little Rock.
H. greggi Willett- Hills SW of Mojave
H. caruthersi Willett- E. side Sierras, head of Indian Wells Canyon.
H. fisheri (Bartsch)-5000 to 7000 ft. Johnson & Surprise Canyons, Panamint Mts., Inyo Co., Calif.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

The Conchological Club of Southern California met at the home of Mr. and Mrs. George Willett on Jan. 6,1942. The meeting was called to order by the president Mr. John Q. Burch , who appointed Mrs. Gillis to act as secretary pro tem. The minutes of the last meeting were read and approved, also a characteristic letter from the secretary, Mrs. Effie Clark.

Mr. E.P. Chace reported there was a new paper on North American Shells by Walter Webb, and another on Neritid Mollusks of the Western Atlantic by Henry D. Russell, M.C.Z.

Mr. Morris Caruthers reported that he was in correspondence with two or three outside speakers whom he hopes to get sometime during the year knowing that those on the program would gladly make room for such treats.

After discussion of our future meeting place, due to the emergency, the president said that he would notify the members if we were to meet in a private home, but it was hoped that we would be able to meet in the Hancock Foundation Building.

The motion that we express our thanks to Mr. and Mrs. J.C. Marsh for printing the 1942 programs was unanimously carried.

Mr. George Willett, although " pinch-hitting" , gave an interesting paper on the Neptuneidae and Buccinidae, illustrating with many specimens.

Mr. John Burch, using his card index, talked interestingly on Acmaeidae. He comfortingly indicated that all of the confusion in classifying Acmaeidae was not confined to the amateurs.

After adjournment the club enjoyed the hospitality of Mr. and Mrs. Willett. Mrs. Willett showed her beautiful polished stones and the light effects from her flourescent lamp and served delicious refreshments.

Mrs. A.W. Gillis, Sec. Pro. Tem.

NEPTUNEIDAE AND BUCCINIDAE BY GEORGE WILLETT

These two families were formerly combined under the family name Buccinidae, the older of the two names, but are now generally considered to have family characters. The principal external difference between the two groups appears to lie in the operculum, which is larger with apical nucleus in Neptuneidae, and smaller with lateral nucleus in Buccineidae. In fact, in the genus Volutharpa of the latter family, the operculum is so exceedingly small as to be practically imperceptible. In most species of Neptuneidae the outer lip is thin, while in Buccinidae it is frequently thickened and expanded. The family name Chrysodomidae used by Dr. Dall in Bulletin 112 is, at least so far as Pacific coast species are concerned, a synonym of Neptuneidae, the genus Chrydodomus being Neptunea.

The family Neptuneidae is largely boreal in distribution, exceptions being the genera Kellettia, Cantharus, Macron and Exiloidea, with a few species of other genera coming south as far as California in deep water. One example of these is Neptunea tabulata which may be found off our coast in fifty fathoms or more. It also occurs in Pliocene and lower Pleistocene deposits in Southern Calif. Several species and races in this family, some of them of doubtful nomenclatural standing have been described from fossil faunas of various localities. An Atlantic species, Neptunea antigua, is used in Europe for both food and bait, being known commonly as the " red whelk".

Both genera of Buccinidae [illegible] found on our coast, Buccinum and Volutharpa are restricted to northern latitudes, excepting for species that come farther south in deep water. One species, Buccinum strigillatum, has been taken off Saan Diego in 822 ftms. and another B. viridum off the Santa Barbara Islands in 414 ftms. Apparently no member of this family has been found fossil in Calif. The genus Buccinum is common in the north Atlantic, and at least one species, B. undatum is used for food. The shells of this genus are peculiarly liable to great variation in size,form and sculpture. This renders the classification of species very difficult.

Minutes of the Meeting of February Second, 1942

The Conchological Club of Southern California met at the home of Mr. and Mrs. John Q. Burch, 1611 S. Elena Ave., Redondo Beach, California, the evening of February second. The minutes of the previous meeting were approved as printed.

Mr. and Mrs. H.C.Berry, 4185 Garthwaite Ave., Los Angeles were welcomed.

After discussion it was moved and carried that our future meeting place would be Clifton's Cafeteria, 648 S. Broadway, Los Angeles. The meeting to be at 7:30 P.M. with as many as possible coming early at 6:30 P.M. and having dinner together.

The membership committee proposed the names of Meade E. and Ruth C. French 792 W. 26th St., San Pedro, Calif. for associate membership. They were so elected.

There being no further business the meeting was turned over to Mr. Tom Burch. His paper on Fouling of Ship's Bottoms was accompanied with most interesting slides.

He reported ----

Fouling diminishes the speed of ships up to 50% and increases the time 10% and fuel consumption 40%. It necessitates one month a year in dry docks and $100,000,000.00 is spent a year combating fouling.

Methods used in combating fouling are very old. Ships were sheathed with lead plates and the plates removed when badly fouled. The first paint preparation was patented in England in 1867. Various materials were used from arsenic to mercury and from garlic to tobacco. The difficulty is that the poison only reaches those that come in contact with it and it is soon dissolved. The mouths of some of the organisms are relatively far from where they are attached and so do not touch the paint. As the organisms multiply rapidly and attach themselves one upon another the toxicants are only temporary repellents.

Preventive methods to be effective must be against the first sliming film and be based on a knowledge of the life history of the numerous organisms, as -- speed of the ship, temperature of the water, time it takes to reach maturity etc.

The organisms that are responsible for so much trouble are commonly called worms (Coral), grass (Hydroids), moss (Algae and Suckers). Barnacles, Teredos and such mollusks as Ostren lurida, Mytilus odulis, Pecten latiauritus and Saxicava arctica.

Fouling of ship's bottoms is probably responsible for much of the geographical distribution of many species.

After adjournment the Club enjoyed refreshments and a pleasant social time in the new Burch Museum.

There were 26 members present.

Respectively Submitted

Secretary Pro Tem

H.W. Gillis

Minutes of the Meeting of March 3, 1942

The March meeting of the Conchological Club of Southern California was held on Tues. Mar. 3rd. in the Pine Room of Clifton's Cafeteria and was called to order at 7:30 by President John Q. Burch. On account of illness, our regular secretary, Mrs. Effie Clark has been absent and much missed from our Jan., Feb. and Mar. meetings. Mrs. Gillis acted as secretary for the February meeting which was held in the Burch home Shell Room ar Redondo Beach, on the regular date, Feb. 3rd. As Mrs. Gillis was not out for the March meeting a brief and informal report was given by Tom Burch, to which the temporary secretary begs leave to add that Mr. Tom Burch gave a scholarly and well illustrated talk on "the causes of fouling of ship's bottoms at the said Feb. meeting and that Mead E. French and Mrs. Ruth C. French were elected to associate membership in this club at that meeting.

There were no formal committee reports. It was moved, seconded, and duly voted that the club continue to meet at the Clifton Broadway Cafeteria. Current collecting notes brought out that the Pleistocene exposure opposite the San Pedro Lumber Co. plant on San Pedro-Wilmington Road is being destroyed as the material is being used for filling and surfacing elsewhere. This is frequently spoken of as the "New San Pedro Lumber Yard Exposure" to distinguish it from Arnold's "Lumber Yard Exposure" which was done away with years ago.

Dr. Gregg and Mr. Caruthers reported two trips for land shells. Mr. Stronng read two interesting letters -- one from Dr. Hertlein reporting progress on papers on Arca, Pteriacoa, and Conidao and another letter from Mr. Walter Eyerdam saying it is impossible for him to continue correspondence or exchange.

It was reported that Mr. V.D.P. Spicer, long a member of this club and now returned to active duty in the Navy has made a visit to this neighborhood recently. Also that Leslie Jean Smith, daughter of Allyn G. Smith (one of the first masculine members of the club) is to be married shortly.

Mrs. Thomas Burch, having been introduced to the club a motion was made and carried that a committee of three be appointed to put into tangible form the club's good wishes for Tom and his bride. President Burch appointed Mr. E.P. Baker, Mrs. Effie Clark and Mrs. E.P. Chace.

The business being disposed of Mr. Caruthers, program chairman, presented Dr. Howard Hill in an interesting talk on "Pholadidae and Related Forms". He illustrated his talk with some fine specimens.

As Mrs. Clark was unable to be present and give her skeduled talk, Mr. Chace passed around a few Pleistocene specimens brought to accompany Mrs. Clark's notes.

President Burch filled in with notes from his "Card File". It should be noted that the form which he has identified as Actoocina infrequens from his local dredgings is almost certainly not that species, which is not believed to range from Corinto, Nicauragua south to Panama.

Adjournment was after the usual manner. There were 26 members present and four guests, Miss Mae Plumb, Miss Verna Mann, Miss Morton and Mrs. Howard Hill.

Respectfully submittes,

Elsie M. Chace,

Secretary Pro. Tem.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

The Conchological Club is now meeting at Clifton's Cafeteria, 648 S. Broadway, Los Angeles at 6:30 P.M. the first tuesday of each month. The next meeting will be held on April 7.

It is not obligatory that you have dinner with us. Please come to the meetings at your convenience.

Mr. E.P. Chace has just received a letter from our associate member Walter J. Eyerdam of Seattle. Mr. Eyerdam reports that he is working long shifts seven days a week building war ships for the United States. This allows him no spare time for his shell correspondents.

Some time ago Mr. Eyerdam wrote the editor that his nephews are serving as officers in the United States Army. Mrs. Eyerdam and daughter are visiting relatives in the middle west.

Virginia Putney has written from Glendale that she has Red Cross work every tuesday night and regrets her inability to be with us until perhaps in June.

E.V. Edmonds has been working day and night with the medical corps of the California State Guard. While we miss the jovial company of Mr. and Mrs. "Eve", permit us to add that we appreciate the fact that nothing should be allowed to interfere in any way with the only really important work at this time. Don is serving his country in Honolulu.

The following publications have been received during the past month:

California Fish and Game, Vol. 28, No. 1, January 1942 contains a series of interesting articles about the introduction of exotic fish and animals into California. The 1941 Pismo Clam Census is another article of interest.

"List of Mollusca of Grand Isle, Louisiana, Recorded From the Louisiana State University Marine Laboratory", published Feb. 19, 1942 in the occasional papers of the Marine Laboratory, Louisiana State University, Baton Rougue, La. Mr. Harold W. Harry is the author of his well written faunal list and discussion of the ecology.

The bulletin of the American Malacological Union contains a number of papers of interest. This issue not only gives the proceedings of the Eleventh Annual Meeting at Rockland and Thomaston, Maine and the revised membership list but prints the papers presented at the Symposium on Methods of Collecting and Preserving Mollusks. "Collecting and Preserving Fresh Water Snails" by Frank V. Baker, "On Collecting Fresh Water Mussels" by Henry van der Schalie, "Land Shell Collecting" by William J. Clench, "Shore and Shallow Water Collecting" by B.R. Bales, "Dredging for Every One" by Tom Burch, "Four to Four Hundred Feet Beneath the Sea" by Jeanne S. Schwengel, and "Diving as Applied to Shell Collecting" by Thomas L. McGinty.

Membership in the American Malacological Union is open to anyone interested in the study or collection of shells. The annual dues are one dollar. There is no initiation fee. If you wish to join send your dollar and name and address to the financial secretary, Mrs. Harold R. Robertson, Buffalo Museum of Science, Buffalo, N.Y.

The additional numbers of Johnsonia were received this month. No. 2 on the Genus Ficus (Pyrula) and No. 3 on the Genera Dosinin, Macrocallista and Amiantis.

For the convenience of subscribers a yearly rate of $3.00 has been fixed to cover the first 100 pages. Individual copies may, of course, be purchased as issued but the annual rate is not only less expensive but much less trouble for all concerned.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

The Conchological Club of Southern California met at the Clifton Cafeteria at 640 S. Broadway, Los Angeles at 7:30 P.M., April 7, 1942 with 21 members and a visitor, Mr. Todd Campbell of Santa Monica, present.

The meeting was called to order by the vice-president, Mr. E.P. Baker. Communications consisted of a letter from Mr. J.M. Marsh reporting it to be impossible for he and Mrs. Marsh to attend club meetings in the future. The secretary was directed by a vote of the club members to express their regret at their absence. The serious illness of Mrs. De Rose Rutherford and the death of her mother, Mrs. Mathews, was reported and the sending of flowers in the name of the club for Mrs. Mathew's funeral was reported by the secretary. The club directed the secretary to express to Mrs. Rutherford the sympathy at her illness and bereavement.

A bill was allowed the secretary for an itemized list of expenses incurred for the club in the amount of $15.02.

Mr. E.J. Post returned from his recent trip to Florida bringing a number of interesting shells for club members and a report of many changes there due to war activities.

Mr. A.M. Strong gave a talk, not on Epitonidae because some of the required material was not availayle, but on Acteocinidae, a family we all know a little about, but generally such a very little. He soothed the vanity of a number of us by saying that, though many persons know many of the species, the genera were in such a decided muddle that no one had as yet been able to straighten them out. He then gave us such clear definitions of the species and their rannge that there will no doubt be a few less clouds on the conchological horizons of quite a number of collectors. His illustrative material was complete and most interesting.

Following this talk was one by Mr. Ralph Borman. He too, selected a subject other than the one listed, as all members are priviledged to do. His chosen subject was Tritonalia, of which he had recently collected some very beautiful and rare specimens.

Considerable discussion on various points of identification and collection localities followed his talk about this very beautiful and hard-to-work-out genus. The meeting was then adjourned.

Effie M. Clark, Secretary.

"Natural History Hobbies", a booklet of 24 pages, published by the Cincinnati Museum of Natural History as Miscellaneous Publication No.3, on April, 1942 was received. In the paper Mr. Ralph Dury has an article entitled "Shell Collecting" but there are other articles of interest to some of our members such as "Collecting Fossils", "Collecting Rocks and Minerals" etc.

This reporter has just had returned to him two more letters addressed to shell collecting correspondents in the Philippine Islands. Both were stamped with the Returned to Sender - Service Suspended. These letters left Redondo Beach stamped Nov. 10, 1941 and seem to have been right through the action. A short time ago we received two letters returned addressed to persons in France over a year ago. We wonder where they have been in the meantime. A short time ago we did get a letter from Mr. Wm. Griffith on the Island of Malta. A number of us have exchanged with him in happier times. He reported that he and his were all right at that time. We wish we could be as sure of our friends in Poland, Latvia etc. We have had no word from them since the beginning of the Hitler rampage.

Dr. Maxwell Smith has announced another new shell book to be ready in May -- "A Review of the Volutidae (Volutes)". Those interested my order directly to Maxwell Smith, Box 92, Lantana, Florida. Price $6.80.

Our associate member Mr. A.Sorensen of Pacific Grove has just sent us some very fine photographs of many fine shells which he brought back with him on his recent trip to West Mexico. Some of these plates should be printed and made available to more students of this fauna. Mr. Sorensen has the idea so seldom seen of using a growth series of a species. For example one of the plates of West Mexican Conus is arranged in rows of specimens ranging from the juvenile to the adults with each line devoted to one species. By using this plate it should be an easy matter to classify the following species: Conus princeps, purpurascens, virgatus, regularis, comptus, mahogani, perplexus, orion, gladiator, and nux. He has treated other genera in a similar manner.

We have a note from our secretary, Mrs. Effie Clark advising us that Miss Edna T. Cook had just paid her a visit with "something less than a pint of Odostomias for classification", and the additional note that "the afternoon was too short". The ladies must have spent most of the afternoon visiting.

Mr. and Mrs. E.P. Chace honored us with a visit last sunday afternoon. They brought a tray of specimens of Tritonalia. Mr. and Mrs. Ralph Borman, with their newly classified specimens of T.fusconotata Dall etc. have caused little short of consternation to some of us. We read and studied all the afternoon and regret to report that we are still not too happy about changing all of the old labels in our collections of Tritonalia. It is obvious that IF any of the names in this group are to be finally placed in synonomy the other names in common usage are all older than T. fusconotata Dall 1919.

The editor of this publication would be very happy to publish a report on the relative taxonomic standing of Muricopsis and Muricidea and their exact distinctions. If any of the members think they have Muricopsis erinaciodes Val. we would appreciate knowing it and why.

The tides for the month of May will be of little use to the collector who does not carry a lantern. The best day time tides follow:

Wed. May 6 - 8:31 A.M. minus 0.3
Thur. " 7 - 9:43 A.M. " 0.2
Fri. " 8 - 10:43 A.M. " 0.1

The early risers and those wishing to collect in the bays may be able to do very well the first week in June. These tides follow:

June 1 - 5 A.M. minus 1.5
2 - 5:54 " 1.2
3 - 6:52 " 0.8
4 - 7:55 " 0.3
5 - 8:58 plus 0.1

IMPORTANT

All members are urged to please mail all news about shells, shell books, shell collectors, shell trips and localities etc. etc. to your reporter. John Q. Burch, 1611 Elena Ave., Redondo Beach, California.

Our next meeting will be held at Clifton's Cafeteria, 648 S. Broadway, Los Angeles, Calif. on the evening of May 5. We will have dinner at 6:30 P.M. and the meeting will convene at 7:30 P.M. in the Pine Room.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA* May 5,1942/

The Conchological Club of Southern California met in the Pine Room of the Clifton Cafeteria at 640 S. Broadway, Los Angeles, May 5, 1942. They were called to order by the president, John Q. Burch. There were 26 members present and one visitor, Don Smith of Hollywood who expressed a desire to become a member.

The nomenclature committee in response to a request by a member in reference to the use of the name Bulla for a mollusk when it had also been used for an insect, reported that a special ruling had been made in the case because it had been so long and so widely used, but added that this was an exceptional ruling that did not apply to other names sanctioned by usage only.

There was rejoicing among the members at the return of two of our old time stand-bys who had been absent for some time because of illness- Mrs. George W. Austin and Mr. Charles W. Schlagel. We were saddened at the continued and very serious illness of Mrs. De Rose Rutherford, who still in the hospital, was reported as but slightly improved with but little hope of recovery.

The secretary was directed by a vote of the members to write in the name of the club a letter expressing their sympathy.

The paper of the evening was given by John Q. Burch and his subject was Brachiopoda. The paper was so full of interest and contained so much information of which most of us have so little knowledge, that a motion was made and carried requesting that mimeographed copies be furnished the members and which he kindly consented to do.

There was considerable discussion of the subject and time spent in inspection of the full set of illustrative material. The meeting was then adjourned.

Effie M. Clark, Secretary.

The secretary regrets to announce the death at noon, May 11,1942 of Mrs. De Rose Rutherford. She will be interred beside her mother, recently deceased, at Van Nuys. Flowers were sent in the name of the club.

A New Year card addressed to our member, Colonel Paul D. Bunker, U.S.A., Philippine Islands, was returned to the secretary recently and marked " Returned to Sender- Srrvice Discontinued". Let us hope that whatever shells come his way are our kind and not those sent out by the Japs.

Miss Cook spent Sunday, May 10 with the secretary bringing her Epitoniums and the " somewhat less than a pint" of Odostomias". We put names " for better or worse " on the Epitoniums and most of the Odostomias except for a few that were " nuts too hard to crack".

IMPORTANT

All members are urged to please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter.

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Our next meeting will be held at Clifton's Cafeteria, 648 S. Broadway, Los Angeles, Calif. on the evening of June 2. We will have dinner at 6:30 P.M. and the meeting will convene at 7 :30 P.M. in the Pine Room.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 12
JUNE 1942

Your editor's inquiries in the May issue brought some immediate and interesting information. A letter from Dr. Myra Keen of Stanford University covering several of the questions raised follows:

"I notice in the minutes of the April meeting of the Conchological Club you ask for light on the taxonomic standing of Muricopsis and Muricidea. As this was a point on which I have been puzzled I decided to do some digging, and I got hit with such a thunderbolt I must report at once. First as to Muricopsis : This was proposed by Bucquoy, Dautzenberg, and Dollfus in 1882, in their Mollusques Marins du Roussillon, vol. 1, pt. 1, p. 19, with Murex blainvillei Payraudeau as sole species and therefore type by monotypy. This shell looks much like Muricopsis dubia (Sowerby) of the Gulf of California. But as to Muricidea -- here is the jolt: It was proposed by Swainson in 1840 in his Treatise on Malacology on p. 64 thus : " The two other aberrant types, which we consider as completing the circle of the Muricinae, we name Vitulina and Muricidea ... The type of Muricidea is the harp-like Murex magellanicus (Ency. Method. pl. 414, fig. 4 a,b)". When I traced this species I found it is a synonym of M. geversianus and is the genotype of Trophon Montfort, 1810. Therefore Muricidea is an absolute synonym of Trophon and must dissapear from the literature. Why no one else has pointed this out I am at a loss to understand. Current usage of Muricidea dates, apparently, from F.C. Baker's citation of hexagona of the West Indian fauna as the type of Muricidea (Swainson) as emended by Mörch, 1852. But no amount of emendation or re-interpretation can wriggle out from under a clear-cut original designation of type such as that of Swainson's. I think it is about the only place in Swainson's whole treatise that he used the word " type "; hexagona is among the species he included in the genus, on p. 296, but, according to the Rules of Zoological Nomenclature, that would have no bearing on the type of the genus. So-- you may forget Muricidea."

Your editor's comments on the specimens of Tritonalia collected by our members, Mr. and Mrs. Ralph Borman, and classified as T. fusconotata Dall brings the following comments from Dr. Myra Keen :

" I am writing Mrs. Chace today relative to what you report as " consternation" concerning the Tritonalia identifications from the National Museum, as the problem is not quite clear to me. I interpreted fusconotata as a name for a special form of foveolata, and I do not see how it would affect the nomenclatural status of the latter. " And in a later letter the following :

" My latest conclusion on the fusconotata matter is that it is probably a synonym of foveolata. In my notes made at the National Museum I find I wrote, concerning the holotype of fusconotata: " equals foveolata with two spiral bands". Dr. Rehder's identification was, evidently, correct enough. The rows of brown spots which Dall mentioned must have been on some other shell or he must have mixed specimens when writing the description. At any rate, we must accept the holotype as standard of reference, since no illustration was published at the time of description".

So until further notice this writer proposes to retain the label Tritonalia foveolata Hinds 1843 on all of his specimens in this group.

Tom and John Q. Burch have been dredging off Redondo Beach in about 25 ftms. a form of Tritonalia, on which we have placed the tentative label T. epiphanes Dall. The following excerpts from Dr. Keen's letters regarding this species may be of interest : " Also, I am mentioning to Mrs. Chace that I sent in for checking at the same time a specimen of what looked to me like Tritonalia epiphanea as I remembered the type; Dr. Rehder confirmed my identification, so there is at least one authentic specimen of that species on the Coast". We then sent our specimens to Dr. Keen and received the following note: " Your epiphanea checks fairly well with our specimen except that yours have slightly heavier axial ribs".

While dredging on the shale bed off Monterey, Calif. in from 10 to 40 ftms. Tom Burch and I brought in large numbers of specimens of Tritonalia. I classified them all as T. barbarensis Gabb. Then our friend, Mr. Allyn Smith divided them into two lots separating a species labelled T. squamulifera Carpenter. I was still of the opinion that I could see an intergrade between the two lots but when Mr. George Willett agreed with Allyn Smith I bowed to the preponderance of eminent authority. I recently sent these shells to Dr. Myra Keen for her opinion and her comments follow : " My hunch which I mentioned on my card worked: the holotype of Tritonalia squamulifera (Carpenter in Gabb) is in the paleontological collection of the University of California and I have borrowed it for comparison. I find that the only specimen in our collection which can be so identified is one from the Pleistocene at Santa Barbara, the type locality. I am sending this to you so that you can see what the species is ; you may exhibit it at the next Club meeting if you wish. The canal is, unfortunately broken; in the type it is about 2/3 as long as the aperature and is open. The type has slightly more regular sculpture and has five denticles on the outer lip. You will see that the box of specimens which you have labelled as squamulifera will have to be renamed. They are close to barbarensis and probably constitute what Bartsch was about to name as a new species when I was in Washington two years ago. I remember he said he had concluded that Gabb had included two distinct species under the name barbarensis."

The April,1942 issue of California Fish and Game has been received. Mr. Garth Murphy has a very fine article covering 14 pages on " Relationship of The Fresh-Water Mussel to Trout in the Truckee River". All members interested in the fresh water fauna of California should make every effort to get a copy of this paper.

The Nautilus of April 1942 has been received. There are a number of fine articles dealing with our own coast. " The Habits of Life of Some West Coast Bivalves" by Dr. Fritz Haas, " Four New Gastropods from the Gulf of California" by Wyatt Durham, " A New Gyraulus from the Pleistocene of California and a new Parapholyx from a Suppoded Pliocene Deposit in Oregon" by Frank C. Baker, the article in memory of " Ida Shepard Oldroyd" prepared by members of the Conchological Club of Southern California. Our associate member, Mr. Walter J. Eyerdam has a very interesting article titled " Excursions to Lake Baical". Mr. and Mrs. Ralph Bormann and Ralph Bormann, Jr. published an interesting note " Some Rare California Shells". Dr. Wendell O. Gregg published a lengthy note on " Additional Utah Records"/

The Journal of Conchology of April 1942 has been received. This is the organ of the Conchological Society of Great Britain and Ireland". This issue contains many fine articles and it is cheering to note that our British students are carrying on with their collecting and research.

We were happy to have as our guest over the weekend, Mr. W.T. O'Gara, now with the United States Navy. Mr. O'Gara is a student of conchology from Fort Worth, Texas. He took his A.B. and M.A. from Texas Christian University and had been working one year at Michigan University on his Ph. D. when war was declared. We went collecting at Malaga Cove and also at Del Rey.

There seem to be no tides worth consideration in Southern California for the month of June. There will be some rather good early morning tides the first part of July.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA* No. 13

July 1942

IMPORTANT

All members are urged to attend the next meeting, July 7 at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. We meet in the Pine room. Many members meet at 6:30 P.M. for dinner, but others merely drop in for the meeting which convenes about 7:30 P.M.

Dr. Wendell O. Gregg will give his report on the West American Planorbidae and Mr. and Mrs. Fred Barnett will give their discussion of " Collecting at Catalina".

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Meeting of June 2, 1942

The Conchological Club of Southern California met at Clifton's Cafeteria 648 S. Broadway, June 2, 1942. The meeting was called to order by the president, John Q. Burch and there were twenty members present. The membership committee having reported favorably , Don Smith, whose address is 5930 Barton Ave., Hollywood, was elected to membership.

By vote the secretary was instructed to write Mr. A. Haven Smith a letter of thanks for the mimeograph work done by the Union High School and to request that a bill be sent us for material used (The arrival of the bill before this could be done obviated the necessity for such a letter, The amount of the bill was $3.74.)

Due to the changes in our meeting place and perhaps to other causes as well the club attendance has fallen off considerably, so it was suggested and carried by a vote of the club that the " Minutes " be mailed to active members with a note as to time and place of meeting and sent out to reach members the week preceeding the meeting to follow.

The program was then taken up and Conrad Limbaugh, pinch-hitting for his friend, Jack Bradshaw, who could not be present, was the first to give his talk which was on experience in Diving for Shells. He and several of his friends have had considerable experience in this method of shell collecting. This is certainly a hard way to get shells but as his talk proved, exciting fun and very informative regarding the habits of mollusks. Those who can qualify for this sport excite the envy and admiration of those of us who cannot qualify- most of us must get our shells in less vigorous ways and be satisfied, often with less perfect material. He brought with him a considerable number of fine living shells with an account of where they were found and their abundance - or lack of it.

The second paper was on land shells and given by one who speaks with authority on the subject- Mrs. E.P. Chace. It was listened to with wondering awe by most of us- awe that any one person could cover so many miles and uncover so many rocks in pursuit of that most elusive mollusk, But the evidence was there in the form of an outline, map, and the shells themselves. The paper was much enjoyed.

During a recess, considerable discussion ensued on Tritonalia, which is a very open question as far as determining several of the most perplexing species are concerned. While the secretary is still in a fog as to " which is and which is'nt" there seems to be plenty of good company, and the last word on the subject has not been said.

John Burch had some very interesting as well as some well authenticated specimens to exhibit- and provoke thought and discussion.

The meeting was then adjourned.

Effie M. Clark, Secretary.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA - No. 13

July 1942

We have a letter from Miss Viola S. Bristol, Curator of Mollusks, Natural History Museum, Balboa Park, San Diego, California. Any student of conchology who has visited the San Diego Museum with a perplexing problem is familiar with the cordial co-operation and assistance always given by Miss Bristol. While most of us know of it, it is fitting to mention here that many of the finest collections of west coast mollusks ever formed have been aquired by this institution . Two of the more recent additions have been the Herbert Lowe and Dr. Fred Baker collections. And in addition many of us have made special trips to San Diego to use the extensive scientific library. All of these are not only available but immediately workable thanks to the fine card indexing system of which Miss Bristol has every reason to be proud.

Two more numbers of Johnsonia have been received. No. 4 by W.J. Clench and R.T. Abbott is " The Genera Tectarius and Echinius in the Western Atlantic". No. 5 is " Cerithidea and Batillaria in the Western Atlantic " by Joseph C. Bequart. A careful study of these two fine papers will almost certainly result in some changes in labels and index cards.

We hear that Charlie Chan, the famous detective, is now deeply concerned for his honors. Our member, Don Edmonds, is now on the Honolulu police force.

Dr. E.V. Edmonds has for the past two months been working with the Los Angeles County Live Stock Dept. in the livestock disease control.

A party of our members enjoyed an unusually successful collecting trip on June 21. They explored a new collecting locality along the Palos Verdes Estates. The members of the party were Dr. E.V. Edmonds, Bob Edmonds, Kort Dickenson, Mrs . Effie M. Clark and Mrs. John Q. Burch.

The transfer of your president to the " Swing" shift has, at least temporarily placed the conduct of the club in the able hands of your vice-president, Ned Baker.

We recently received some very fine material from Mr. Paul D. Ford of the Bahama Conchological Society. It takes more than submarines to stop shell study.

Many of us have received fine and rare material from Mr. W.H. Weeks, 508 Willoughby Ave., Brooklyn, N.Y. Mr. Weeks is again actively working with his collection.

Tides- In using the ordinary tide books please bear in mind that the time pinted on them is likely to be the old time and that our time is now an hour later. There are a few rather good early morning tides that may be used by some and particularly those wishing to collect in the bays where the tide is still another hour or more later.

July 14- 4:58 A.M. Minus 0.4
" 15- 5:27 A.M. " 0.3
" 16- 6:00 A.M. " 0.1
" 17- 6:32 A.M. Plus 0.1
" 28- 4:37 A.M. Minus 1.3
" 29- 5:19 A.M. " 1.1.
" 30- 6:00 A.M. " 0.6
" 31- 6:41 A.M. " 0.1
Aug. 1 - 7:23 A.M. Plus 0.6

Our associate members, Mr. and Mrs. W.P. Cook of San Diego, visited a number of shell collecting friends over the week end of June 14-15.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA - No. 13
July 1942

Our member, Mr. A. Sorensen, has an article in the current Nautilus titled " Collecting in Mexico". Members should be warned not to read this paper unless they are fortunate enough to be able to make an immediate trip to west Mexico. Mr. Sorensen has made a number of trips south and the magnificent material he has brought back with him tends to be downright discouraging to us ordinary collectors who feel fortunate if the job permits us to get away for an occasional low tide.

We have a letter from Dr. L.G. Hertlein of the California Academy of Sciences in which he informs us that the monograph on tertiary and recent brachiopods of western North America prepared by himself and Dr. U.S. Grant IV is in press. It is hoped that the paper will be published soon.

One of our former good members, Jack Dowdle, writes us that he is now in the employ of the Transcontinental and Western Air Inc. and stationed at Winslow, Arizona. His address is 210 West Fourth St. While Jack's specialties were Florida Liguus and rare marines it seems that it should be in order to encourage him to at least start his stock of duplicates of the Arizona fauna.

We have a letter from Dr. E.W. Gifford of the Museum of Paleontology, Berkeley in which he reports that he and Mrs. Gifford recently made a collecting trip to Monterey and took among other things a fine series of Olivella pycna Berry including an orange colored specimen.

Professor Trevor Kincaid of the University of Washington writes us that the work of the Oceanographical Laboratories has been nearly suspended. The director and several members of the staff are in war work and the " Catalyst" has been docked " for the duration". The courses at Friday Harbor have been reduced to purely biological subjects, one in Zoology the others in Botany. However, he reports that he expects to leave for Friday Harbor about June 20 and they will probably extemporise some light equipment and do some shallow dredging.

Walter J. Eyerdam has just written us " Refering to (Murex) Trophon geversianus mentioned in Myra Keen's comment on Muricidea, I found several hundred specimens washed up on the far off uninhabited shore of the Gulf of San Mathias about half way down the Atlantic coast of Patagonia/. It was associated with Buccinops globosum and Trophon laciniatus etc. "

" I had made all preparations to go to Kodiak Island in the herring fishery and would be on my way but the fisheries have been closed by government order to all except residents of Alaska. I am still working swing shift at the naval construction shipyards since last September".

" In the Sunday P.I. of two weeks ago there is a picture (photo) of a big snake, 42 feet long, which was killed in eastern Ecuador in almost the identical region that I had expected to explore at about the time if war had not stopped my plans. The snake is said to have been a terrible monster for many years and had eaten two mail carriers and several dozen natives".

So your editor has hastily scratched eastern Ecuador off the list of places to go shell collecting.

Dr. W.J. Clench named a new Florida Liguus in the May 9 issue of the Proceedings of the New England Zoological Club. The new species is Liguus fasciatus osmenti Clench.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA * No. 14
August 1942

The Minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us a few 1½¢ stamps.

All members are urged to attend the next meeting, Aug. 4, at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. We meet in the Pine Room. Many members meet at 6:30 P.M. for dinner, but others merely drop in for the meeting which convenes at 7:30 P.M.

Dr. A. Haven Smith will talk on the subject of " Teachers and Conchology", and Mrs. Mary Cornett will report on the " Olividae".

Dr. Maxwell Smith of Lantana, Florida sent us an interesting box of shells containing some material from localities frequently appearing on the front pages these days as scenes of battle in the South Pacific. These shells will be passed out to members of the club at the coming meeting so if you wish to get your share you had better not be absent. This box was simply sent us with the compliments of Dr. Smith.

Duplicate specimens sent us by our friends will be distributed among the membership and greatly appreciated.

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

We have been advised by our member, Mr. Albert Bauman, that the liquids Chlorox,Purex etc. used by many shell collectors for cleaning purposes, may still be purchased in the original strength in some markets. However, this type of material is certain to be made in weaker solutions if it is not withdrawn from the market entirely.

Our member, Mr. W.P. Cook of San Diego has forwarded a letter to us from Lindsey and Hall, Los Angeles agents for the Dupont plastics some of us have been using in lieu of glass for riker mounts. Their letter follows and is self explanatory. " In view of the use to which you propose putting the Plastacele we seriously doubt your ability to have a priority rating. We can supply you at the moment with Pyralin without the rating, the price of which would be $1.00 per sheet, f.o.b. Los Angeles. It is altogether probable that very shortly Pyralin will also be on the restricted list so it may be advisable for you to order what you may need for some time in advance".

We have missed our energetic collector, Dr. Charles R. Wright at the recent meetings. A letter with the word Free written in the postage stamp corner has been received with the obvious explanation. Dr. Wright is now serving in the United States Navy. He was to have appeared on our September program but his report must be advanced until " after the duration" and we trust that he will then be ready with a complete paper on the " Fauna of Japan".

A letter from Mr. Ted Bayer, known to many of us as one of the most careful students of the Florida fauna, advises that he is now with the Florida State Museum, Gainesville, Florida.

A letter from Dr. W.J. Clench of the Museum of Comparative Zoology, Harvard College, Cambridge, Mass., advised that his very able assistant, Mr. R. T. Abbott is now in the Naval Air Force. A number of us had the pleasure of meeting Mr. Abbott when he and Dr. Clench visited Southern California two years ago on their way to Hawaii and the South Pacific. His recent work in the Johnsonia is well known. While we will miss his work in the field of conchology we all appreciate the fact that young men of his ability will, as a matter of course, serve their country at this time.

Dr. Clench also sends a note from one of our sister organizations: " The Boston Malacological Club has been progressing very well indeed, with our membership increasing each year, though the war will probably cut into it very materially this coming season."

The passing of Mr. Hugh Fulton of London, England is too great a loss to science to attempt to discuss in this paper. Without a doubt the Nautilus and all other publications will try to cover the long service of Mr. Fulton.

A letter from Miss Adele Koto, Beloit, Wisconsin from whom many of us have been fortunate enough to receive beautiful specimens, advises that she is now employed in a defense plant and like many others of us, must take care of her shells at odd times.

We regret that we have no late news of the progress of Dr. S. Stillman Berry who recently entered a San Francisco hospital for a radical mastoid operation.

Our associate member, Mr. A. Sorensen of Pacific Grove recently sent us another of his fine photographs. Extracts from his letter follows " It is a growth series of Murex nigritus Philippi. My reason for this photo is to show that the young and the partially grown of this species are either white or very light colored and that only the adults are black. Yes, I even have some fairly large ones that are nearly white. All this is prompted by a color picture in Steinbeack and Rickett's new book " Sea of Cortez" entitled Phyllonotus princeps Broderip. In my opinion the classification is wrong and I take it to be Murex nigritus. The P. princeps varies from this in several aspects although it is mostly white. I have also called Mr. Rickett's attention to his Fig. 1 on Plate 38 which he calls Acanthina lugubris Sowerby while it evidently is Acanthina angelica. The A. lugubris, as you know, is found in plenty on the west coast of Lower California and occasionally at San Diego. So far I have not seen it in the Gulf of California nor have I heard of it from there."

A very happy group of fossil collectors consisting of Mr. and Mrs. E.V. Edmonds, Miss Edna T. Cook and Mrs. Effie Clark visited a number of San Pedro fossil beds, and made a call on the Chaces, Friday, July 11. It is too soon to list any great finds if any were made for much sifting and sorting are preliminary to determining the contents of a fossil bag. The beds visited were, Gaffy Street Bridge, 8th and Palos Verdes, and the " Lumber Yard" which is due to soon go the way of Knob Hill, and will be no more. Some very interesting, if not new, Turbonillas are to be found at the Gaffy Street Bridge site, but they are as yet unidentified. An unusual number of pairs of Crassinella branneri, Corbula luteola, and Nucula exigua were taken. They are all old things but kept in pairs by the conditions of the bed in which they are deposited.

We heard that Professor G.E. MacGinitie of the Kerckoff Laboratory, Corona Del Mar, has entered the military service.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA * No. 14
August 1942

The Conchological Club of Southern California met at the usual time at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. There were 24 members present. The meeting was called to order by the vice-president, Mr. E.P. Baker.

Among the number were two members we were glad to have with us again, Mr. A. Haven Smith and Mrs. Faye B. Howard, a former president of the club. We hope it will not be so long again before they meet with us.

Mr. Morris Caruthers read a letter from Mr. W.H. Weeks, a collector known to many of the older members in which he relates the loss of most of his valuable collection by theft and wanton destruction of some one who must have had a distraught mind- he could not have been a real conchologist. It is to be hoped that Mr. Week's friends will see that he is remembered when they have duplicate material.

A very interesting letter was received from Mr. A. Sorensen which contained so much of interest it will no doubt be printed in the minutes.

Due to a rather heavy drain on the resources of the club, a collection was taken to defray the unusual items. This amounted to $5.58.

A member reported that July 24 was Jim Marsh's birthday and a motion was made and unanimously passed that the secretary be instructed to express for the club their good wishes for the year to come and regret that he has of late been unable to meet with us. We hope he will not long be so hindered and that he and Mrs. Marsh may be able to take their place among us they have so long filled for we greatly miss them.

Mention was also made of the appreciation the club members feel for the generously given specimens of Mr. E.J. Post. He has brought so often for distribution so many and such beautiful Florida shells- so different from our own and so unobtainable for many members.

Tom Burch, taking over for the Barnetts who could not be present, gave a talk , on request of several seeking information, on methods of cataloging. It is a deep and very important subject for shell collectors and one that all must take up sooner or later if they continue collecting. Listening to Tom talk no doubt brought regret to some that they had not began sooner a task of such importance, and envy that he had so much the start of them.

The second paper was on Planorbidae by Dr. Wendell O. Gregg. He had much to say on this subject that so few collectors know much about due to the necessity of going so far afield to collect them. The shells of this group are most interesting, and I am sure after seeing the beautifully mounted illustrative material, all of us will do a bit more work in the ddpths of streams and rivers as soon as the tire situation lets us roam the countryside once more.

Dr. Gregg has promised us an outline of his subject which will be a help in classifying these different and difficult groups- difficult because literature on the subject is so widely scattered and so much research yet unfinished.

The meeting was then adjourned.

Mrs. Effie M. Clark, Secretary.

Tide Note- All worth while low tides for the month of August are too early to be of any value in Southern California. Any collector fortunate enough to make a trip north though will find some fine collecting.

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All members are urged to attend the next meeting, Sept. 1, at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. We meet in the Pine Room. Many members meet at 6:30 P.M. for dinner, but others merely drop in for the meeting which convenes at 7:30 P.M.

Mr. E.P. Chace will report on " Crepidula".

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

All of our fossil collectors will be interested in the following note just received from Mr. E.P. Chace. " The Edmonds were down yesterday and we went over to the new San Pedro Lumber Yard to try to gather up a few more fossils. The guards came over and ran us off. They said it was orders from the Navy. They were sorry to have to do it, but had to protect their jobs etc. So, at least for the present collecting is 'out'. Next we went up to Hilltop Quarry and had another dissapointment. Grading work for a housing project has covered the fossil deposit to a depth of 8 ft. So there is no more Hilltop Quarry. Timm's Pt. is still available and so is an exposure at 3rd and Mesa Sts., San Pedro."

Your editor has just placed another order for some fine specimens of Pleurotomaria from Japan. Mr. Harold W. Harry, author and student of conchology from the University of Louisiana was our guest for a day. We are getting accustomed to having our friends from far and wide greet us at the door in the uniform of the U.S. Army, Navy or Marine Corps. For the time being any of his many friends may write him c/O Company 364, U.S. Naval Training Station, San Diego, Calif.

Dr. Howard R. Hill, Zoologist of the Los Angeles Museum advises that Dr. J. Wyatt Durham, Museum of Paleontology, University of California, Berkeley, has been working over the collection of corals in the museum. The result is that we now have many new species of our local material properly classified and available for reference.

Mr. Paul H. Reed, Box 267, Tavares, Florida, sent us a list of duplicates of Florida shells. He wishes to exchange for California species. Those interested in exchanging will write him.

We will be glad to list the names in the minutes of persons wishing exchanges.

Mr. Carl I. Thomas, one of our Orange County members, writes that he expects to attend some of the meetings soon. He remitted his dues and advised that his new address is 262 N. Pine St., Orange, Calif.

Remittances of stamps to assist in the cost of mailing the minutes have been received with sincere thanks from the following: Mr. W.P. Cook of San Diego, Edna M. Marsden of Los Angeles, Natural History Museum of San Diego, Mr. Wm. G. Fargo of Jackson, Mich., Dr. Myra Keen of Stanford University and Mr. Carl I. Thomas of Orange, Calif.

More fine shells will be distributed among the members at the September meeting. The following letter from our associate member, Walter Eyerdam, will be self explanatory." I have sent a package of shells of about 20 species to be used as a donation to the shell club with my compliments. In most cases I have included plenty of labels. Some of these shells are hard to get and you will note that most of them are from remote Pacific islands in present war activity. Nearly all were collected by me. Please divide them up so that everybody can get an equal share or at least have some that they wish. My collection of California land and fresh water shells is not very well represented so I would be glad to make exchanges with any one. I can also use all species from everywhere that are not represented in my collection including pleistocene fossils. Your shell club reports are very interesting and quite the thing to boost the morale of it's members. I sincerely hope that the war will increase enthusiasm in the study of conchology". Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Washington.

We have an interesting letter from Mr. Robert Moses, Conchologist of London, England. He has much fine material for exchange when this is again possible. Of course, exchanging with England is in abeyance for the duration. Even if it were possible to get an occasional parcel through at this time Mr. Moses wrote of the many letters he has lost in transit.

We have another interesting letter from Mr. Paul D. Ford, president of the Bahamas Conchological Society, Nassau, Bahamas. Their club is carrying on and growing. The following quotation from Mr. Ford's long letter is interesting. "Concerning the Strombus gallus, our Society's emblem. They are very hard to get, and very expensive when you are fortunate enough to find one to buy. Of the 50 members of our society, only 4 of us have perfect specimens. But they are all living in hopes of some day owning one."

Mr. Charles W. Schlagel, our member from Alhambra, is entering the hospital for an operation. His greatest concern seemed to be that he would be compelled to miss our meetings. He may be reassured that some of us will look out for his interests in the matter of the distribution of duplicate shells. They will be waiting his return from the hospital.

A collecting note from Mrs. E.P. Chace follows: " Another batch of piling has been pulled in the outer harbor at San Pedro. About 20 species were taken from the wreckage but very little of interest. Some good specimens of Mytilus edulis (right with M. californianus), a few Iselica fenestrata and several Terebratalia transversa were the high lights. As was the case last year the supply of Pecten multirugosus Gale (Hinnites giganteus Gray) and Chama pellucida Sowerby was limited only by the collectors patience or odor endurance."

Our secretary, Mrs. Effie M. Clark, is vacationing on her son's ranch near Yuba City, Calif. One line from her long letter explains a great deal." The country never looked so beautiful and the fruit trees look like lumber piles with the braces to keep them from breaking down." The temporary address is P.O. Box 511,Yuba City.

In regard to Strombus raininus nanus Bales, described by Dr. B.R. Bales in the current Nautilus. It is quite probable that many of us have this species in our cabinets under various names. It is suggested that a check be made of your Strombus from Lake Worth, Florida.

Dr. B. R. Bales of Circleville, Ohio sends news of several conchologists.
" Dr. H.E. Wheeler, a conchologist, is now at the University of Arkansas. He is an old time bird egg student, but of late years has done a lot of work with shells. especially with land mollusks. "
" Both Paul and Tom McGinty are employed in war work at Boynton and Palm Beach, Fla."
" Ted Bayer has been employed by the Beal-Maltby Museum. The museum is primarily a shell exhibition and Ted should be able to do justice to the job. Dr. Beal's fine collection is housed there."

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Helices of Northern California
by Mrs. E.P. Chace

This is the report delivered to the Conchological Club of Southern California at the meeting of June 2,1942.

For about fifty years Dr. Pilsbry has been saying that there are no true Helices native to this part of the world- so a paper on the above title would be like a boy's composition on " The Snakes of Ireland"- " There aren't any", but Sowerby and Fulton continue to disagree. With this in mind I have spread out a little and have copied here the high points of the most recent authoritative classification, Dr. Pilsbry's Manual of North American Land Shells North of Mexico.

Super Family Helicacae

Family I- Helicidae

A European family represented here by the introduced species, H. aspersa, pisana,lactea etc.

Family II- Helicellidae

Five species belonging to four genera have been introduced locally in North America. Henry Hemphill recorded finding one species, Cochlicella ventricosa in Oakland, Calif. in 1899. This is a small shell with a very high cone, not helicoid in form.

Family III- Helminthoglyptidae

Distribution- Pacific Slope north to Sitka; Florida Keys, Mexico,Central America and West Indies; Andes from Ecuador to Western Argentine.

Family IV- Camaenidae

Subfamily- Oreohelicinae- mostly Rocky Mountains but coming into Southern California.

Subfamily- Ammonitellinae- California,Montana,Idaho.

Family V- Polygyridae

" The most ubiquitous and widely spread North American family of Helices being found in all the states of the union except four (Wyoming,Colorado,Utah, and Nevada) and in Alaska,Canada and Mexico. It is also more numerous in species than any other land snail family of our area". Pilsbry.

Both of the subfamilies which make up this family occur in Northern Calif.

Subfamily Polygyrinae- Genus Trilobopsis- type T. loricata Gould (five species all small.

Subfamily Triodopsinae Pilsbry 1939- Genus Vespericola- type V. columbiana pilosa- includes V. columbiana columbiana, depressa (oregon), pilosa (down to San Pablo,Calif.), latilabrum (a new name for var. labiosa- this var. is not Californian but individuals from colonies of V. pilosa are some times very similar to it), oria (Placerville neighborhood), hapla Berry, sierrana Berry (Weed,Calif. shasta (La Moine, Calif.), megasoma Pilsbry (Marin Co. and North), armigera Ancey (Santa Cruz Co., Calif.), pinicola Berry (Monterey Co.).

In many places the Polygyras build up strong colonies. It is usually much easier to collect a dozen Vespericola than a similar number of Helminthoglypta or Monadenia. They seem to prefer damp places, often on or under rocks which rest in mud so damp the water stands where the rock presses. I have also taken them from logs so decayed they were soggy and actually inside the large hollow stems of the swamp growing " snake head" or Darlingtonia.

The Trilobopsis are not quite so " amphibious" as a rule although I have taken loricata right with pinicola but many of them are rock slide shells or are found at least in summer in dry fern mats.

In making a " Guide to Groups of Polygyridae by Shell Features"- Pilsbry says " Capacious,Mesodon-like shells of medium size; toothless or with a parietal tooth; not distinctly striate, usually hirsute- " Vespericola

"Rather small, hirsute or roughened shells, aperture 3 toothed". Trilobopsis.

Now returning to the family Helminthoglyptidae, my real love and the group which most of us have in mind when we speak of native Helices. Pilsbry divides this family into 8 subfamilies of which 4 are represented in the United States and Canada but only 1, Helminthoglyptinae comes into California. It is divided into three genera: Monadenia- type M. fidelis Gould, Helminthoglypta-type H. tudiculata Binney, Micrarionta- type M. facta (Newc.).

Micrarionta is largely a desert group so does not come under this study.

Helminthoglypta and Monadenia are separated on anatomical characters and the sculpture of the early whorls.

The only Monadenia which I know to be found outside of Northern California is M. fidelis which ranges from Orick, Mendocino Co.,Calif. north to Southern Alaska and was originally described from near Puget Sound. The late Junius Henderson once told me that it does not have anything like the variability in the northern part of its range that it shows in the southern part.

Pilsbry and Berry have described quite a number of subspecies ,forms and races under this species. In many cases these are geographical races. Many of you have heard Mr. Chace and me say that if we are shown a representative set of M. fidelis from a locality in the regions where we have collected we can say very closely whence it came. That being true perhaps these races are sufficiently different to make names for them convenient, but it should be bourne in mind that a large set from almost any colony will include individuals that duplicate individuals from distant (an differently named) colonies. So my own feeling is that these names do not indicate anything of great biologic importance (this comment goes for M. fidelis beryllica Chace too).

Around Crescent City, Calif. and Roseburg, Oregon, we found that M. fidelis has 4 seasons per year, 2 of activity and 2 of dormancy. We found that it was active during the spring, then sealed down for several dry weeks during the summer, came out when the first warm rains came in the autumn and hid out for sure when it turned cold. Oddly enough,in the northern part of California, M. fidelis climbs up trees or large rocks (if possible) for the summer rest season and buries itself deeply in rock slides or other cover during the winter, but around Roseburg this summer the hideout was under moss around squirrel holes in the woods. In some other places it was found sealing to branches in brush piles etc. on the ground.

Some of the older authors speak of M. infumata as arboreal. My own experience is limited. I have found it seldom active and so far as I have been able to see it aestivates under rocks, frequently in the edge of a shrinking stream.

M. hillebrandi,churchi, and chaceana are distinctly rock slide shells. Back of Placerville we found mormonum sometimes in rock slides, and some times in and around old logs.

Of the genus Helminthoglypta Pilsbry says: " This is a group of many species, races, and minor local forms. By characters of the dart apparatus and shell the species fall into 6 series not rigidly definable but at least the first 4 seem to be natural groups".

The series of H. tudiculata is the only one which goes into northern Calif. It ranges from near Ensenada, Lower Calif. across the Oregon line and is an inland group from Kern Co. north. The northern Calif. Helminthoglyptas are thinner and smaller than our southern ones. H. hertleini Hanna & Smith comes from near Ashland,Ore. and close to where the Shasta R. flows into the Klamath. In the Sierras north of Yosemite the local races seem to scatter through H. cypraeophila and H. napaea. The Feather River Canyon shells which I had tentatively referred to H. allensmithi Pils. have been sent to Mr. Smith since I gave this paper and he writes us that he is not sure what they are but they are not H. allensmithi- they are too malleate. Guess we will have to send them to Dr. Pilsbry.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA * No. 15
September 1942

The Conchological Club of Southern California met at the usual time on Aug. 4 at Clifton's Cafeteria, 648 S. Broadway, Los Angeles with 25 members and 3 visitors present. The meeting was called to order by the vice-president, Mr. E.P. Baker. The three visitors, Miss Dorothy Kesser, 1833 W. 47 St., Mrs. Alfred Deppell, 858 Tremaine Ave. (both of Los Angeles), and Jerry Howard of Anaheim, Calif., all expressed a desire to become members of the club. A collection of $5.50 was taken to meet expenses in connection with publication and mailing of the minutes, which after deducting the amount of #3.78 for stencils, made up a recent deficit and adding 75¢ for dues leaves a balance on hand of 97¢. The first paper given was by Dr. A. Haven Smith and his subject was " Teachers and Conchology". In an informal talk he spoke of the difficulties teachers have in getting pupils started in classification and shell arrangement and asked for suggestions from shell collectors. Considerable discussion arose as to methods of collecting and identification and to the relative value of dead shells and living shells. If no conclusions were arrived at, there were plenty of varieties of opinion to be taken into consideration as expressed by those who have had experience.

The second paper was on Olividae by Mrs. Mary Cornett. She had charts showing the families and subfamilies, and descriptions of life history and anatomical differences of the different groups. It made a very interesting talk. While it would be too lengthy to reproduce in full, it would make an interesting study and it is to be hoped a brief summary will be furnished for the notes. Her illustrative material of this most beautiful group was of great interest to those present.

Discussion followed till closing time when distance made it necessary for many of the members to be on their way and the meeting was adjourned.

Effie M. Clark, Secretary.

We are glad to announce the recovery of Dr. S.S. Berry from his recent illness The latest news is a letter from Mr. A. Sorensen." Dr. Berry was at my house last thursday after a four weeks stay in a San Francisco hospital where he had a major mastoid operation. He is quite cheerful and feels confident that the operation was a complete success. He spent considerable time here studying my latest aquisitions, sanctioning some of the classifications and correcting others. He took home with him among other things, several Mexican Chitons that require close study before determining their status."

Dr. E.W. and Mrs. Gifford of Berkeley, Calif. also mention a visit from Dr. Berry and commented on his remarkably rapid recovery.

Bill Osment, for whom the newest Florida Liguus was named, is about to start or possibly has started on a collecting trip to Mexico. He is also interested in orchids and will collect them also while on the trip. As he speaks Spanish fluently he should be able to enlist the natives to help him collect.

We were pleased to have these complimentary words from Mr. William G. Fargo, of Jackson, Michigan." It certainly would be worth several dollars a year to me and to other students of conchology if abstracts of some of the papers read could be included in your mimeographed publications. For instance; Dr. Gregg's paper on Planorbidae. Of course I know it takes time to abstract such papers and cut stencils My own interest continues to be in the field of Florida Tertiary paleontology- a fertile field despite the extensive work done by Dall et al. fifty years and more ago, in South Florida and later by Mansfield, Julia Gardner, Tucker et al. in North Florida. Like California, the state is big and the middle has not been much explored. A thorough knowledge of the recent is necessary to work in the Tertiary and I continue to add to my library and collections pertaining to recent shells."

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA* No. 16
October 1942

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us a few 1½¢ stamps.

All members are urged to attend the next meeting, Oct. 6, at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. We meet in the Pine Room. Many members meet at 6:30 P.M. for dinner, but others merely drop in for the meeting which convenes at 7:30 P.M.

Mr. E.P. Baker will report on " Nassarius" and Mrs. Laura Bagley on "Florida"

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

An interesting collecting note has just been received from Dr. E.W. and Mrs. Gifford."You will be interested to know that one morning's collecting at Crescent City, Calif. in latter August yielded 650 living Olivella pycna Berry and large numbers of Olivella biplicata Sowerby. We hope to have something to report later on the variation in Olivella pycna, especially form. Virtually all have the characteristic zigzag markings."

A note on this matter from Mr. and Mrs. E.P. Chace follows. " We collected Olivella biplicata Sowerby, rather large ones, at Pebble Beach, Crescent City in 1929 and in 1931, but did not find Olivella pycna Berry. It may be that O. pycna is more migratory and we did not happen to hit a colony of them. We did take fine specimens of Tellina bodegensis Dall with the O. biplicata. "

Miss Edna N. Wilson and Mr. W.P. Cook, San Diego, Calif. report taking numbers of specimens of Pyramidella adamsi Carpenter 1864 in Mission Bay. Tom and John Q. Burch took them in great numbers on several occasions in Mission Bay on the eel grass. The last report was January, 1940. They found this species particularly abundant and somewhat larger in the Estero de Todos Santos Bay below Ensenada, Lower Calif. It has been taken on many occasions from Newport Bay, Orange County, Calif. Mr. E.P. Baker recently handed the writer some small material from Newport Bay for classification and there were specimens of this species in the lot. We seem to find no record of the species north of Orange County.

And in this connection, the writer will be pleased to hear from any one able to separate Pyramidella mexicana Dall and Bartsch 1909 and P. adamsi Carp. 1864. Obviously if they are synonomous Carpenter's name should be used. A faunal list of Mission Bay by Morrisson, recently read, classified this species as P. conica Adams. The name P. conica Adams var variegata Carpenter also appears in some of the literature.

John Q. Burch

A newspaper clipping just received gives us an idea of the vacation activities of our very efficient secretary, Mrs. Effie M. Clark. It is a summary of an address made before the Kiwanis Club of Yuba County and concerns the paleontology and stratigraphy of that district. This recalls the old story of the mail carrier taking a hike on his day off.

We were pleased to receive a long, newsy and censored letter from Mrs. Ida Worthy, Patumahoe, Auckland, New Zealand. Briefly stated it seems that all of our New Zealand collectors are either in the armed forces or are working night and day in war work.

Harold Harry is now stationed at the U.S. Naval Hospital, Corona, Calif.

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October 1942

The September meeting of the Conchological Club of Southern California was held on Sept. 1 at Clifton's Cafeteria, 7th and Broadway, Los Angeles. As president Burch is still working swing shift in a local ship yard, vice-pres. Baker took charge of the meeting. Mrs. Clark was still enjoying her vacation so Mrs. Elsie Chace was drafted as her substitute. Twenty members and 5 guests were present.

The minutes of the preceeding meeting were approved as printed. Correspondence- a letter from Mr. W.P. Cook of San Diego saying that Pyramidella adamsi had recently been taken in Mission Bay, and a note from Mr. Charles Schlagel asking for specimens of a fresh water clam whose inner layer is the form of calcium carbonate known as aragonite. Mr. A.M. Strong informed the club that the desired shell is a Margaritifera from the Upper Kern River, but no one could suggest where the shell can be obtained.

The nomenclature discussions included a separate from the Proceedings of the Biological Society of Washington in which Dr. H. A. Rehder called attention to the fact that Trimusculus Schmidt 1818 has 6 years priority over Gadinia Gray 1824.

Letters from Drs. Pilsbry and Keen were read discussing the Mytilus adamsianus -Brachidontes multiformis question. The club reached the conclusion that while Brachidontes multiformis Carpenter is older than Mytilus adamsianus Dunker, they refer to different shells.

Dr. Clinton Hubbard introduced his wife as a would be member. In Mrs. Clark's absense no one had any forms for Mrs. Hubbard to sign but Mrs. Chace accepted dues from her none the less.

A box of shells from Mr. Walter Eyerdam was distributed among the members present and the secretary instructed to send Mr. Eyerdam the thanks of the club. (Done as ordered. E.M.C.).

Notice was given of the sale of the library of the late E.E. Hand, and that Dr. Hill had a list of the books for sale.

Two papers were presented. Mr. E.P. Chace on " Crepidula". Most of Mr. Chace 's material is familiar but the interesting fact that the safest specific separation in Crepidula is the shape of the edge of the deck and that a new genus and species - Verticumbo charybdis Berry, has been described from our San Pedro fossils comparatively lately, should perhaps be repeated for those who could not be present. Mr. Willett reported that, at his request, Dr. Woodring (U.S.N.M.) had examined the type of Crepidula orbiculata Dall, and that it strongly resembles C. lingulata.

Mr. A.M. Strong discussed our local Cerithidae with special reference to a recent paper by J.O. Bequaert. Their conclusions differ widely and Mr. Strong's paper will be covered in another section of the notes. Both papers were illustrated with numerous sets of shells and after lively discussion the club adjourned. Respectfully submitted, Elsie M. Chace, Secretary pro. tem.

Mr. Morris E. Caruthers probably states the opinion of many of us when he registers some indignation that a visitor should come to California for a few days, make a few casual visits to some beach, not take the time to visit any of the local conchologists with huge collections representing many years of study, and then break out in extensive publication on our fauna thus cluttering up the literature with erroneous conclusions.

Mr. Caruthers suggests that our Septifer bifurcatus (Conrad) Reeve 1837 was described from Oahu, Hawaiian Islands and should perhaps be studied with the idea of giving it another name. Of course, we are using a great many Japanese and Pacific Ocean names largely because insufficient material has been available for a proper study of these species. It is expected that when our boys return from Tokyo they will bring enough shells back with them to settle these problems.

Comments on West American Lirularias
by George Willett

In the process of naming the Margarites of the sub-genus Lirularia, which are so abundant in the lower Pleistocene deposits at San Pedro, I found it necessary to study the characters of all the Pacific coast representatives in our collections. As this group has puzzled many west coast conchologists (mydelf included), it may be worth while to report the conclusions arrived at in this study for what they are worth.

It appears to me that there are only three rather variable species of Lirularia commonly represented in west American collections, these being Margarites succintus Carpenter, M. lirulatus Carpenter, and M. optabilis Carpenter. These three, by the way, are all grouped by Tryon under the oldest name, lirulatus. Although Dall gives the range of succintus as ' south to San Diego', all my specimens are from Alaska. This is the smallest member of the group, with smooth, rounded whorls, grayish in color, with black spirals which usually show plainly within the aperture.

Carpenter's description of Margarites lirulatus calls for a shell with 2 cords on the spire and about 8 on the base. The type locality is Puget Sound. Oldroyd's figure (reproduced from Dall) does not show such a shell; neither have I seen it in any collection, but I have examined few specimens from Puget Sound. The portion of the description of lirulatus quoted by Oldroyd from Tryon applies to a composite of three species, only the first portion apparently referring to the shell Carpenter had when he described lirulatus. Specimens with from 7 to 9 spiral cords are abundant in some Pleistocene deposits at San Pedro; also, I have them from 20 fathoms off South Coronado Island and off San Pedro, and from 30 fathoms off Catalina. These, however, nearly always have 3 spirals, which in many specimens are acute, and probably should be called M. lirulatus acuticostatus Carpenter. Shore specimens from Cayucos, Point Vicente and Todos Santos Bay, and a small series from 10 fathoms off Santa Cruz Island, have about five basal cords, thus resembling the figures of Dall and Oldroyd. This is probably the shell Carpenter described as parcipictus, which seems also to be a race of lirulatus. A few of my 20 fathom specimens show a lesser number than 8 basal cords, thus indicating intergradation between parcipictus and lirulatus. Shore specimens from Ketchikan, Alaska, are higher than typical, unicolored, with 2 cords on the spire, but only 5 on the base. These, therefore, have the spire as ascribed to typical lirulatus but the base of parcipictus They may be Carpenter's M. lirulatus conicus. A small series from Point Reyes, California, given me by Dr. Gregg, are quite smooth, with an irregular number of spirals, and seem referable to M. lirulatus obsoletus Carpenter.

Margarited optabilis Carpenter is figured by Oldroyd (copied from Dall), but, for some reason, the species is not included in her text. It is a pointed, grayish-colored shell, occasionally longitudinally maculated with white, and more frequently with alternating white and dark spots on the peripheral keel. In my experience, this is an uncommon species, living, the only typical lot I have coming from 50-75 fathoms off Catalina Island. However, the large form, called M. optabilis knechti by Arnold, is very abundant in the lower Pleistocene of San Pedro. Although this form has previously been reported as a fossil, and both Dall and Keen place the northern limit of the species optabilis in the vicinity of Santa Barbara, I have four specimens of M. optabilis knechti that were dredged off Forrester Island, Alaska.

California Fish and Game, No. 3, Vol. 28, July ,1942 has been mailed. As usual this copy contains some interesting articles and the reviews of current books by Mr. Richard S. Croker, editor, should never be overlooked.

Notes on Cerithidae

by A.M. Strong

The oldest valid name in Cerithidae from the west coast is Cerithium californicum Haldeman 1840. Type locality, California, without definite location. This is followed by Cerithium montagnei d'Orbigny, 1841. Type locality, Guayaquil River, Ecuador. Any study of the nomenclature in the genus should consider these two species and their synonyms first.

Following these in dates of publication are the following. C.B. Adams in 1852 recognized three species from Panama. He described these as Cerithium pulchrum, C. validum and C. reevianum. He stated that C. pulchrum was nearest to C. montagnei d' Orbigny and that C. validum closely resembled C. varicosum Sowerby, also that C. hegeswichii Philippi is a similar shell. Carpenter, after examining Adam's specimens states (P.Z.S., 1863, S.M.C. reprint, p. 186) that C. pulchrum is " A distinct and truly beautiful species", that C. reevianum is C. montagnei d' Orbigny; and that C. validum is C. varicosum Sowerby. C. varicosum was described by Sowerby in 1835 without locality but later, 1855, he gave the locality as the West coast of Nicaragua. Sowerby's use of the name was preoccupied by Valenciennes in 1832, locality uncertain but probably west coast and probably the same shell as described by Sowerby. There is an older Cerithium varicosum Defrance, 1817, which is quite distinct and does not come from the west coast. While varicosum cannot be used for the west coast shell this does not invallidate C. validum C.B. Adams. I am unable to find any record that invallidates either C. validum C.B. Adams or C. pulchrum C.B. Adams.

Carpenter, in P.Z.S. for 1856, described Cerithium albonodosum and gave the type locality as San Diego. In the Mazatlan Catalogue, also 1856, he recognized two species from the Gulf of California. One of these he considered to be C. montagnei and the other he described as C. varicosum Sowerby var. mazatlanica. Later in the Suppl. Report for 1863 he lists C. albonodosa from Guaymas as common and notes, " Probably a variety of mazatlanica". While the name albonodosa was given in a paper read in 1856 the proceedings were not published until 1857 and it is a question which of these two names should be considered the oldest.

Stearns (Proc. U.S. Nat. Mus., vol. 17, p. 192) lists C. albonodosa from San Juanico and other points on the outer coast of Lower California and states, " Both this and mazatlanica may be varieties of the more northern form, C. sacrata Gould.

Dall in Peruvian Fauna (Proc. U.S. Nat. Mus., vol. 37, p. 230) only lists Cerithidea montagnei d' Orbigny and gives the range as Gulf of California to Chile.

Tomlin in the shells from the St. George Expedition (Jr. of Conch., London, vol. 18, p. 192) lists Cerithidea fortiuscula Bayle equals C. varicosum Sowerby (not Defrance) from Balboa, dead shells and states that " They may be the same as montagnei d'Orbigny".

Pilsbry and Lowe (Proc. Acad. Nat. Sci., Phila. vol. 84, p. 123) recognize three species from the southern fauna, Cerithidea montagnei (d' Orbigny), C. valida (C.B. Adams) and C. pulchra (C.B. Adams) They list all three as having been collected at the same locality in Montijo Bay, Republic of Panama. For all species from the Gulf of California they use C. mazatlanica Carpenter and C. albonodosa Carpenter.

This about covers all reports on west coast species where the author either collected or examined collections made at definite points on the west coast. There are a few other names which appear in west coast literature, nearly all definitely synonyms or missidentifications using names which have no application to the west coast fauna.

H. Boquaert in " Random Notes on American Potamididae" published in the Nautilus, vol. 56, No. 1, gives a review of these names and reaches conclusions which are quite different in some cases from the older authors. In it he states that " The larger Cerithidea of the Pacific coast from Southern California to Ecuador, are readily separable into two species". For one of these he uses the name C. montagnei (d' Orbigny) and for the other C. hegewischii Philippi. The latter was described in 1848 from Mexico, without stating which coast. He argues that as west coast specimens agree very well with Philippi's figure and he knows of nothing from the east coast of Mexico that fit as well, it can be assumed that the type came from the west coast. This is purely a matter of personal opinion and cannot be proven. The fauna of the east coast of Mexico is not well known. " I am unable to separate, even as a variety, Cerithium varicosum var. mazatlanica Carpenter after examining cotypes at the Mus. Comp. Zool. " I take this to mean that he compared Philippi's figure with cotypes of mazatlanica. At another place he states that " In the northern part of its range C. hegewischii is more slender with the varices lower,tho conspicuously dirty white. This is albonodosa Carp. " In still another place he states of C. californica Haldeman, " I am not fully convinced that it is more than a race of C. hegewischii. The natural conclusion from this would be that C. californica is the species and C. hegewischii, albonododa and mazatlanica synonyms.

Of the Central American and Panama shells Bequaert states, " South of Mexico, C. hegewischii grows much larger, with coarse sculpture producing var. pulchra (C.B. Adams) which , however, intergrades with the typical form". Of C. valida (C.B. Adams) he states, " This was taken together with C. pulchrum and appears to be based on a large and slender specimen of the latter." Typical C. montagnei d' Orbigny is without varices and the spiral sculpture is confined to the base. Bequaert states that sometimes there is one fine rib-like varix and this varix seems to have made trouble. C.B. Adams C. pulchra calls for varices. Tryon Man. Conch. vol. 8, p. 161) uses the combination C. montagnei var. pulchra C.B. Adams, while von Martens , according to Bequaert, (Biol. Central Am., Terr. Fluv. Moll., 1900, p. 570) uses for the same shell Potamides (Cerithidea) varicosus Kiener. I am not able to find any reference to Kiener's name. These last statements are based on figures and not on the shells themselves. Adams types should be in Dr. Pilsbry's hands and available for study and comparison with specimens from the type localities. Until such comparisons it would hardly seem advisable to make definite statements. It is to be presumed that Pilsbry and Lowe compared their specimens with those of Adams and all agree in considering that C. pulchra and C. valida are different shells and that C. varicosus Sowerby is very close to if not identical with C. valida.

The species in the genus Cerithidea live at or above hightide line on mud flats or in mangrove swamps. There are long stretches of the west coast where such conditions do not occur and they are broken up into isolated colonies where much variation is to be expected. Very extensive collections would be required in order to determine the limits of variation for species and varieties. Such material is not available at the present time. Typical Cerithidea montagnei d' Orbigny seems to be well defined through out its range. It is easily recognized by the thickened, flaring outer lip, lack of varices and by having the spiral sculpture confined to the base. Cerithidea californica Haldeman is a well known shell ranging from Baulinas Bay, California, to an unknown distance to the south. Ordinarily it is found living on the mud flats in great numbers and is of a uniform dark color. Occasionally it is found on clean sand near the edges of the mud flats. Under these conditions the shells develop white varices and one or more series of white nodes. These are evidently the C. albonodosa of Carpenter as nothing else from San Diego that fits the description is known. The difference is hardly worth a varietal name. Cerithidea sacrata Gould from the Sacramento River and var. hyporhysa Berry from a single spot in San Diego Bay are from brackish water and have lost almost all sign of sculpture.

Cerithidea mazatlanica (Carpenter) from the Gulf of California is easily placed from a comparison of the description and specimens from the type locality. It is a uniformly dark shell averaging a little shorter and broader than C. californica (Haldeman). However, specimens can easily be picked out from California and the Gulf which are identical. The difference would hardly seem to be enough to warrant even a varietal distinction. The same applies to the shell listed as C. albonodosa from the Gulf of California tho the latter usually shows more white than the typical form. It would therefore seem proper to consider the California and Gulf of California forms to belong to the same species.

There occurs in the Gulf of California at San Felipe and other localities another form larger and with coarser sculpture than C. californica. A very similar shell is found at Santa Elena, Ecuador. This seems to be the shell reported by Pilsbry and Lowe as Cerithidea valida (C.B. Adams). They list it from the Gulf of Fonseca,Corinto and Montijo,Republic of Panama. This also seems to be the shell for which Bequaert uses C. pulchra C.B. Adams as a variety. This would be correct if C. valida and C. pulchra are the same as it has page priority. He states that it intergrades with the typical form, referring to C. hegewischii We have no specimens showing intergrading forms and every one else seems to consider C. valida and C. pulchra to be distinct.

There also occurs at places in the Gulf of California a form only about half the size of C. californica with much the same shape and sculpture. The varices are orange instead of white as in albonodosa. This was named Cerithidea daemondi by Dall in collections but the name was never published. Whether or not it is entitled to a varietal name is open to question. We also have from San Jose, Guatemala, a few specimens with the general appearance of C. montagnei but with at least one strong varix and spiral sculpture on tthe spire. This may be C. pulchra C.B. Adams but our specimens are considerably smaller than indicated by the measurements given by Adams. It is probable that specimens from localities from which we have no specimens would show other forms equally difficult to place.

From the above I reach the following conclusions; Typical Cerithidea californica (Haldeman) 1840 , ranges from Bolinas Bay, California, to the Gulf of California. As synonyms of the typical form there are C. hegewischii Philippi, 1848, if that be a west coast shell; C. pullata Gould, 1855, type locality, San Diego; and C. fuscata Gould, 1857, type locality San Diego. As possible varieties there are C. albonodosa Carpenter and C. sacrata Gould, with C. hyporhysa Berry as a synonym. A second valid species would be Cerithidea montagnei (d'Orbigny) 1841, with C. reeviana C.B. Adams as a synonym and C. pulchra C.B. Adams as a possible variety. For the larger shells which are the common southern form, whether they be considered to be a variety of C. californica or a good species the problem is more difficult. If Bequaert is correct in considering that C. pulchra and C. valida are identical the name would be Cerithidea pulchra (C.B. Adams) 1852, as that name has page priority. The synonyms would be C. valida C.B. Adams, C. varicosa Valenciennes ,1832, C. varicosa Sowerby (not C. varicosa Defrance, 1817);C. fortiuscula Bayle, 1880; C. meta Li, 1930, and C. aguayoi Clench, 1934. However, if C. pulchra and C. valida are both good species or varieties, as every one except Bequaert seems to consider them, it would be necessary to determine which one is the shell described by Sowerby as C. varicosa. This has generally been considered to be C. valida. C. fortiuscula Bayle and C. aguayoi Clench are both suggested as new names for C. varicosa and C. meta Li is stated by Pilsbry to be a worn example of C. valida.

There is another, apparently good species, which Bequaert does not mention. It is Cerithidea mutata Pilsbry and Vanatta, 1902, from the Galapagos. This is a brackish water shell with faint sculpture, somewhat similar to C. sacrata Gould but smaller and thinner, I have no record of any other record of a Cerithidea from the Galapagos and have no idea as towhat species it could be derived from.

Dr. Maxwell Smith, Lantana, Florida, is now working on a catalogue of the Panamic region. We are looking forward to the completion of his work.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA* No. 16

October 1942

The Watering-Pot Shells

by Dr. H.R. Hill

The small group of curious bivalves known as the " Watering-Pot Shells" are found chiefly in the East Indies. These mollusks begin life as free-living bivalves, but when their shells reach a length of about one quarter of an inch, they sink into the sand or attach themselves to shells or stones and start to build long siphonal tubes. The completed tube is cylindrical and tapering and the tiny bivalves are embedded in the wall near the lower end which is closed by a perforated disk. In some species, the tube is perfectly smooth while in others the surface is covered with grains of sand and tiny pebbles. One interesting form has a series of foliated , encircling frills placed at intervals near the upper or open end of the tube.

In most species the lower end closed by the perforated disk, has a fringe consisting of small tubules. The tubes are rather fragile and are sometimes distorted by the pressure of rock or coral against the side or base during growth.

The Watering-pot Shells belong to the Genus Brachites (formerly called Aspergillum) in the family Bryopidae. Ten species are known- six from the East Indies and one each from Australia, New Zealand, the Red Sea and the Mediterranean.

Mr. William J. Bower, 26 Woodland Ave.,Bronxville, N.Y., writes that he hopes to spend the coming winter in St. Petersburg, Fla. A number of us recall with pleasure the collecting trips we made with Mr. Bower in the party while he was wintering in La Jolla, Calif.

We plan to place an order for some stationary with the Conchological Club emblem and heading. It may also be possible to get some postal cards with our emblem on them. All members wishing some of this stationary will please advise . No doubt the larger our order the less the cost will be.

The following have contributed to assist in the cost of mailing this paper: Miss Edna N. Wilson of Mission Beach, Calif., Aldrich Museum of Balboa, Calif., Dr. E.W. and Mrs. D.S. Gifford of Berkeley, Calif., Dr. L.G. Hertlein of the California Academy of Sciences.

TIDES- Oct. 10- 3:14 P.M. 0-0, Oct. 11- 3:57 P.M. minus 0.2, Oct. 12,4:45 P.M., minus 0.2,Oct. 13-5:41 P.M. 0-0. Oct. 23-2:44 P.M. minus 0.1, Oct. 24-3:20 P.M. minus 0.2, Oct. 25- 3:56 P.M. minus 0.1, Oct. 26- 4:33 P.M. 0.0, Oct. 27- 5:14 P.M. plus 0.3.

Mr. and Mrs. E.P. Chace are enjoying a vacation in the high Sierras. They hope to find additional specimens of at least one proposed new species of land shell, and their route is carefully planned to search for several very rare land shells.

The library of the late E.E. Hand, a long-time member of this club is being offered for sale and a list of 47 items has been received. Only a few shell books are included. The rest are on general science, biology and biographies of noted naturalists including Agassiz and Audobon.Several volumes of the works of Darwin, Huxley,Tyndall and Spencer are in the lot. No prices are quoted. If interested please contact either Miss Julia Rogers, Long Beach or E.P. Chace, San Pedro.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 17

November 1942

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or some 1½¢ stamps.

All members are urged to attend the next meeting, Nov. 3, at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. We meet in the Pine Room. Many members meet at 6:30 P.M. for dinner, but others merely drop in for the meeting which convenes at 7 :30 P.M.

The annual election of officers will be held.

George Willett will report on " Limpet-like Mollusks" and Albert Bauman will report on " San Pedro Matine Mollusks".

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the October Meeting-

The Conchological Club of Southern California met at the usual time and place, Oct. 6,1942. In the absence of the president, John Q. Burch,the vice-president, E.P. Baker, called the meeting to order. There were 19 members and one visitor, Mrs. Bagley's sister, present.

Notice was read of the death of one of our members,Walter L. Brown of Hermosa Beach. By vote of the club Mrs. Chace was asked to write a memorial note for publication in the notes and in the Nautilus. Mr. Morris Caruthers spoke feelingly as one of the many collectors to whom Mr. Brown had given freely of his time and with whom he had so often shared the many shells he had collected or purchased from those who had collected abroad.

Mrs. Clinton D. Hubbard, 2304 Gage Ave., Huntington Park, was duly elected a member of the club.

Several letters concerning the minutes written by those out of the city and who had received them were read. Most of them were commendatory- and a few were not. Considerable discussion took place regarding these comments.
It was recognized that due to war conditions many of those formerly able to meet with us cannot do so now and welcome this method of keeping in touch with the work of the club, and many outside our membership like to know of what we are doing as they have so freely expressed by these letters. But we have so many troubles regarding nomenclature now and surely do not wish to increase them for others; and when our minutes are filed in libraries, as has been done many times, they become " part of the record". So it is well for us to use caution in the summaries of our papers not to include any material that would add to the confusion already existing.

The first paper of the evening was on Nassariidae by E.P. Baker. In his account that might well be titles " The Growth of a Conchologist" , he undoubtedly touched on many recollections in the minds of his listeners of their stony, up-hill road to conchological lore. He gave a detailed history of the ups and downs that this particular family have had in regard to name changes, and of the difficulty that has always attended the separating of the species, due, as an eminent conchologist once said it was possible to do if you could get enough world wide material, all the species ould be made into one. Mr. Baker had, for illustration, representatives of all the West Coast species besides well known ones from other regions, as well as representatives of genera closely related.

The second paper, on Florida shells, was given by Mrs. Laura Bagley. She had a map showing the location of her collecting grounds which she pointed out with graphic descriptions of the fun and troubles that are bound to attend the collectio of such a large number of beautiful shells .

Mrs. Effie M. Clark, Secretary.

The following comment on the papers in the last issue of the Minutes were received from Dr. Myra Keen of Stanford University.

" Mr. Caruthers is probably right about Septifer. I notice that Dall, Bartsch, and Rehder describe no Hawaiian Septifer that seems close to ours. The holotype, fortunately, is in the Philadelphia Academy and is available for restudy.

As to the summaries by Mr. Strong and Mr. Willett, I have little to add. So far as I can see, Mr. Strong has the evidence on Cerithiidae of the coast well organized, and his conclusions appear to be sound. In the matter of the Margarites I have littl to add either. I went over our Puget Sound material and find that the lirulatus from there have two cords on the spire and about eight on the base, as per Carpenter description. My citation of optabilis in the check list was, of course, only a translation of Dall's record into terms of latitude. I am interested to learn that Mr. Willett has gotten the variety knechti living in Alaska; a number of the San Pedro Pleistocene species survive in the northern waters."

An interesting letter was received by Tom Burch from Joanne S. Schwengel of The Academy of Natural Sciences of Philadelphia. " Have just finished naming and describing a new Drupa from Tom McGinty, taken off Palm Beach, and in working up this shell, noticed your Cantharus lugubris C.B. Adams, which was figured by you in the Nautilus Vol. 54, page 46, plate 2, figures 5, 6, and 7. C.B. Adams called this a Buccinum, and Dr. Tryon placed it with the Cantharus, but it should be classed with the Drupa, where we have placed it in the Academy collection. There is so little difference in the west coast Drupa lugubris and our east coast Drupa didyma, that ours has been named didyma, which is from the Greek word didymus, meaning twin."

The following letter from Dr. Paul Bartsch of the Smithsonian Institution is self explanatory. " I notice that in your minutes of the Conchological Club of Southern California, No. 16, page 1, you question the validity of Pyramidella (Longhaeus) mexicana Dall and Bartsch.

I cannot altogether blame you for this, but from the material before us here, the type and additional specimens appear certainly very distinct from adamsi Carpenter. Their parallel distribution with adamsi Carpenter makes the problem a proper one for investigation.

I wish that your club would look this group over carefully and if you find any specimens corresponding to mexicana you would send them to me for examination. I should particularly like to see intergrades between the two.

You are doing fine work on the coast, and I want to congratulate you. I enjoy reading your minutes very much, and wish you continued success."

A collecting note from Miss Edna N. Wilson of Mission Beach follows: Guess the Pyramidella adamsi this year are not able to climb for I did not find one specimen on the eel grass. All were burrowing in sand but in the vicinity of the eel grass.

In Miramar, Guaymas, Mexico, Jan. 1940, both Mr. Bower and I found fine specimens (1 each) of Cerithidea montagnei (d' Orb.) in the lagoon north of Miramar. Mine is so beautiful it is almost my most cherished specimen from Guaymas."

Mr. and Mrs. F.K. Hadley announce a change of address to Box 33, West Newton, Mass. and inclose a dollar bill as a contribution to the cost of this paper. A note from their long letter follows: " The beaches around here are all shut off. Guess it is so everywhere , but these are war times and the coast must be protected."

A letter from Dr. B.R. Bales advises that his son has entered the army air corps.

The Chace's Vacation

We left here sunday, Sept. 13th and should have known better. Whether because of the date or some other reason our hunting that day and the next -in various spots on the Tule River showed us some very beautiful snail country but very few snails.

At Sequoia National Park we were unable to catch up with the superintendent who has to O.K. all collecting permits so cannot add anything to the list made by the Frenches and E.M. Chace last year. But walking along a trail near Crescent Meadow, Emery remarked " Guess I'll have to be a Boy Scout and do a good turn- turn that slab of bark out of the trail". He reached down and turned it over against the tree stump and walked on- without a look. Well, I was behind him and there were two beautiful living Helminthoglypta tularensis sequoia on that bark.

We spent 3 days and 2 nights in Sequoia, and especially enjoyed a trip through Crystal Cave. The ranger told us that he had found a snail sealed to the wall 100 ft. in from the mouth of the cave. As far as he knew it was the same as those outside.

Over at General Grant Grove the collecting was not so good and we had only one day to spend there. The Helminthoglyptas at Grant Grove are H. napaea Berry although it is only 35 miles from Sequoia Park headquarters near where we collected H. t. sequoia.

We cut short our stay at Grant in order to hunt up two places that we had heard about. One of the rangers told us of the Big Stump locality and thought that there might be snails there. The Big Stump is 24 ft. across and there used to be a saw mill there. We found a big pile of sawdust and another of slabs. Beside the small creek we found a very few H. napaea. Whittaker Forest is one of the study and demonstration plots of the University of California, school of Forestry. It is the type locality for H. napaea Berry and H. tularensis pleuro-puncta Berry. Here we did a lot of hunting and found a very few snails. Of particular interest were 2 Haplotrema cf. alameda fieldi Pilsbry, recorded only from Sequoia National Park.

There is said to be " gold in them thar hills". There are surely snails and I believe that there are still things to be found out as well as very enjoyable vacations there. E.M. Chace.

A letter from Dr. Harald A. Rehder of the Smithsonian Institution follows:

" I have enjoyed the minutes of the Conchological Club of Southern California, which you have been kind enough to send me, and to help the publication along I am inclosing a few one and one-half cent stamps.

The articles in the last number on Lirularias and on Cerithidea are very valuable and will be of great help when we come to work on these groups. Unfortunately, I am now too busy with other matters to give them attention and moreover all of our types have been put away for the duration.

In No. 12 of June 1942, appeared a communication from Dr . Keen on Muricopsis and Muricidea. In the discussion she wondered who no one else had pointed out the rue type of Muricidea. The fact is that Woodring in Part 2 of the Miocene Mollusks from Bowden, Jamaica, 1928, page 291, called attention to this, and before him Iredale had brought the matter up.

Please give the members of the Club my best wishes for continued success."

We were glad to have a letter from our old member, Philip (Slim) Connelly. The Connelleys are all well but too busy with war and the C.I.O. to pursue their conchological activities.

Glad tidings from Downey announce the arrival of our newest member. Mary Emelia Kropach was born Sept.22. Our members, Ned and Irene Baker have not as yet decided between ' Gramps','Gramma' or the more dignified ' Grandpa'.

The Genus Entoconcha, J. Muller, on the Pacific Coast

The following letters from Professor Trevor Kincaid, University of Washington, Seattle, Wash. are of great interest. No doubt we shall hear more of this matter as soon as the pending research is more complete.

Sept. 21, 1942- " I spent the summer at Friday Harbor in the San Juan Islands where the University of Washington maintains its Oceanographical Laboratories. On account of war conditions the Coast Guard took over our vessel, the "Catalyst" and the courses offered were much curtailed, only the zoology and botany being offered. The lack of any motive power made it impossible to do any dredging so we were limited to shore collecting.

During the summer we utilized to some extent the large red sea-cucumber, Stichopus californicus as an element in our commissary. The muscular tissue of this animal can be made into an excellent soup or chowder. In opening up large numbers of the cucumbers we occasionally encountered the strange parasitic gastropod, Entoconcha. It appears as a long worm like organism attached at one end to the circumoral region of the echinoderm. No one would dream of its affinities, since all gastropod features are absent, but the body cavity contains embryos in various stages of development, and the more advanced embryos were found to be typical veliger larvae looking very much like those of the sea slugs."

Oct. 2, 1942- " Your letter of September 25 is at hand. I will send you down a specimen of Entoconcha for your collection. It will look odd in a cabinet and the ordinary conchologist would probably tear his hair trying to figure out what to do with it, since it has no sign of a shell in the adult state. The larval form however, of which I will send you a prepared slide is a dead " give away" since the little chap is a typical veliger and is provided with a beautiful curved larval shell and even has an operculum. ***** The placing of the species in the genus Entoconcha was the result of some studies made by the late Dr. J.E. Guberlet. References to this genus are scanty but will be found in the more comprehensive treatises on the mollusca, such as the Cambridge Natural History and the Lancaster Series including the volume by Pelseneer. The only actual reference to Pacific Coast material is the specimens taken in Bering Sea. *** There should be some material in the great German " Handbuch" edited by Kuykenthal."

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In order to clarify a matter that seems to have been misunderstood by a few of our correspondents perhaps a statement of the policy of the Conchological Club of Southern California regarding these mimeographed minutes is in order. It is assumed that our members will publish all descriptions of new species and other articles changing the permanent record in the Nautilus or other established scientific periodicals.

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Mrs. Harold R. Robertson, Buffalo Museum of Science, Buffalo, N.Y., secretary of the American Malacological Union, writes that the Eleventh Annual Report of the A.M.U. containing papers on the methods of collecting and preserving mollusks may be obtained for 25¢ each as long as the paper is available.

Mr. Paul D. Ford, president of the Bahamas Conchological Society, Nassau, Bahamas, has sent us the following notice. " Are there any other members of your society or club , who are desirous of exchanging some of the more unusual California or West Mexican shells for shells from here ? Or perhaps they may have some foreign shell from the Pacific that they would be willing to exchange."

Mr. Chester W. Melville of Chestnut Hill, Mass. writes us " We expect to leave for Florida (Sanibel Island) after Jan.1, '43 for several months if we can get down there."

We are happy to add the name of Mrs. Kate Stephens, 3746 Park Blvd., San Diego to our mailing list. For many years Mrs. Stephens was acknowledged as more or less the ' dean' of the San Diego conchologists.

Dredging off Redondo Beach, California

by Tom Burch

This is an account of the results of five years of more or less extensive dredging operations in the southern part of Santa Monica Bay, California, mostly in the vicinity of the submarine canyon off Redondo Beach. While all forms of life were collected, particular attention was devoted to the collection and study of Mollusca. All other forms of life collected were donated to the Allan Hancock Foundation at the University of Southern California.

While the writer's interest is primarily systematic and morphological, he also paid considerable attention to the habitats and relationships of the mollusca, and during 1940 attempted to secure information in regard to the temperature at which the various forms live. The writer has not as yet secured sufficient information about the temperature factor to warrant a discussion of his results at this time. After the writer returns from his enlistment in the army, however, he hopes to be able to continue this interesting phase.

The area around the Redondo submarine canyon presents a fertile field for dredging operations. It is possible to dredge in numerous different types of habitats within a very small area- a situation that can probably only be found in and around a submarine canyon where deep water approaches close to shore.

Geologic Features

The area under consideration is about six miles square directly off Redondo Beach, California and includes a considerable portion of the Redondo submarine canyon. The Redondo canyon runs six and one-half miles in a generally east-west direction with the east end being about a mile and a half north of the mouth. There are two smaller side arms extending northward from the main canyon, the arm farthest east being the smallest. The sides of the Redondo canyon are mostly of mud and not of lithified rock as in the Monterey canyon. In fact, the writer has encountered rock but once in the canyon and that was a pinacle which rose up to 600 ft. from much deeper water.

It has been suggested that the Redondo canyon and others like it are submerged river gourges that were formed during the Pleistocene times. There is no geologic evidence, however, of vertical variations extensive enough to produce a canyon whose mouth is practically 2,000 ft. deep, as the usual estimate for the lowering of the ocean during the maximum extent of the ice is only 295 ft., allowing for isostatic adjustments.

If the canyons originated a long time ago it is difficult to understand why they have not been largely filled by deposition. Submarine mud slides and currents are not usually considered adequate. Shepard reports, however, that the tip of the Redondo canyon fills gradually and then is followed by a rapid deepening, which in May 1937 changed the depth from six feet to thirty-one feet at the end of the Redondo pier in a few hours. Shepard concludes that the removal must be due to submarine slip or flow. If this continued out to the mouth, it would certainly tend to keep the canyon clear and deep. This has not been established, nor has a submarine delta, which would naturally be formed by the flow, been observed at the mouth of the canyon.

From his study of currents in submarine canyons, Stetson says that the velocities recorded in the canyons are normal and ones which exist on the shelf under present day tidal conditions. The currents, therefore, are merely flowing in pre-existing cuts and are not the cause of them. Currents may have helped to preserve the canyons but not to form them.

Two other theories that have been advanced to explain submarine canyons might well be mentioned here, i.e. formation by solution along faults and sapping by submerged artesian springs. The Palos Verdes Hills are cut with marine terraces which show clearly that the hills have risen repeatedly as a unit.

As the Redondo canyon is almost perfectly straight, it is possible that it represents the fault along which the Palos Verdes Hills block rose. The fault might have crossed an ancient Pleistocene aquifer and the resulting artesian springs could have removed the material from along the fault. Sapping by submerged artesian springs might also explain the presence of the side canyons which are on the north side of the canyon only-- the side from which the aquifer would have approached. In this respect it might be of interest to point out that there is an oil seep near the apex of each side arm and also one about a mile from the tip of the main canyon.

Physical Conditions Affecting the Fauna

The temperature, depth, salinity, oxygen supply, character of the bottom, and many other factors all have their individual effects upon the fauna. These factors all act together in a complicated manner so that it is impossible to give a clear picture of the environmental conditions under which a creature lives by merely stating one factor, such as depth, as is usually done. The temperature, character of the bottom, and food supply are probably the most important factors influencing the fauna in the ocean.

There appears to be a correlation between the depth and temperature-- the latter apparently being of more ecologic importance, as species that live in fairly deep water off Southern California, such as Neptunea tabulata , usually live in shallower water off Washington and may even be littoral in Alaska. Many species that are dredged in 25 fathoms at about 55 degrees off Redondo Beach are dredged in 10 fathoms at about the same temperature off Monterey, California. Some examples of this are: Tritonalia barbarensis Gabb, Trophon triangulatus Carp., Calliostoma annulatum Martyn, Calliostoma canaliculatum Martyn, Calliostoma splendens Carpenter, Astraea inaequalis Martyn.

Food Supply

An ample food supply ~~is probably~~ one of the most important environmental conditions that is necessary for the persistence of a species. Since in its last analysis all life is some form of energy which has been derived from the sun's raysas they strike the earth. As plants are the only organisms that are able to transform this solar energy into living energy, animals being directly or indirectly or indirectly dependent upon plants for their food. With this in mind, one would expect to find the greatest number of animals where plants or their products are the most abundant. It is therefore not surprising that two-thirds of the total number of species that the writer has dredged off Redondo Beach are found in a relatively small area in which Acrasorium and other red algae grow prolifically. The majority of mollusca do not feeddirectly on growing plants nor upon other animals, but instead feed upon the detrital material on the ocean floor. While the number of individuals that feed on other animals, both carnivores and scavengers, is relatively small, they include well over one half of the total number of species.

New Species Dredged off Redondo Beach

Turbonilla burchi Gordon, Pseudomelatoma redondoensis Burch, and Aligena redondoensis Burch. In addition there are several others still in manuscript.

Extentions of Ranges

Species whose ranges have only been extended a short distance such as north from San Pedro or south from Santa Barbara are not designated in the list of species dredged. Some other range extentions are as follows:

Species	Former Range
Gastropoda	
Acteocina planata Carpenter	San Diego
Acteocina carinata Carpenter	San Diego to Gulf of California
Cylichna diegensis Dall	San Diego to Cape San Lucas
Cylichna attonsa Carpenter	San Diego
Clavus hemphilli aeolia Dall	Gulf of California
Moniliopsis grippi Dall	San Diego
Lora kyskana Dall	Aleutians to Puget Sound

Drupa lugubris C.B. Adams	Cape San Lucas to Panama
Aesopus sanctus Dall	Todos Santos Bay, Mex.
Amphissa versicolor incisa Dall	Laguna Beach to San Diego
Trophon bentleyi Dall	San Diego
Trophon orpheus Gould	British Columbia to Oregon
Epitonium spongiosum Carpenter	Oregon to Monterey
Turbonilla valdezi Dall & Bartsch	Vancouver Island to Monterey
Turbonilla canfieldi Dall & Bartsch	Monterey Bay
Turbonilla almo Dall & Bartsch	San Diego
Turbonilla castanella Dall	Monterey
Turbonilla adustus Dall & Bartsch	San Diego
Turbonilla aragoni Dall & Bartsch	Monterey
Odostomia phanea Dall & Bartsch	Monterey
Odostomia farallonensis Dall & Bartsch	Farallone Islands
Rissoina coronadoensis Bartsch	San Diego to San Martin Island
Polinices pallidus Brod. & Sowerby	Alaska

Amphineura

Lepidopleurus cancellatus Sowerby	Bering Strait to Oregon
Ischnochiton sinudentatus Carpenter	Monterey
Chaetopleura prasinata Carpenter	San Diego to Cape San Lucas

Scaphopoda

Dentalium numerosum Dall	Coronado Islands to Panama
Cadulus hepburni Dall	British Columbia to Monterey

Pelecypoda

Nuculana cellulita Dall	Puget Sound
Nuculana minuta lomaensis Dall	San Diego
Pecten pugetensis Oldroyd	San Juan Island
Saxicavella pacifica Dall	off Pt. Loma, San Diego

Pteropoda

Spiratella pacifica Dall	Pt. Barrow to Monterey

LIST OF MOLLUSCA DREDGED OFF REDONDO BEACH, CALIFORNIA

In discussing the depth and character of the sea floor off Redondo depths will be designated only approximately to the following intervals: 10,25,50,75, 100,125 and 150 fathoms. The shallower bottom (10 to 25 fathoms) consists mostly of fine sand with one large patch of gravel and another of coarse yellow sand on each side of the canyon. The deeper areas are primarily mud with one gravel bed on each side of the canyon in 50 fathoms and one bed of very fine gravel and mud in 75 fathoms on the south side of the canyon. Rocks are only found (in the writer's experience) in shallow water near the shore and also in about 50 fathoms off Rocky Point. Reference has already been made to finding a pinacle of rock in deep water on one trip.

The numbers following the species name indicate the depth in fathoms, while the capital letters designate the type of bottom: M, mud; S, sand (fine from 10 fathoms, coarse from 25 fathoms); and G, gravel (with sand and mud).

Amphineura

Lepidopleurus cancellatus Sowerby 25G
Lepidopleurus nexus Carpenter 25G
Lepidopleurus rugatus Carpenter 25G
Oldroydia percrassa Dall 25G
Basiliochiton flectens Carpenter 25G
Ischnochiton berryi Dall 25G
Ischnochiton decipiens Carpenter 25G
Ischnochiton gallina Berry 25G
Ischnochiton radians Carpenter 25G
Ischnochiton retiporosus Carpenter 50G,75G
Ischnochiton sinudentatus Carpenter 25G
Callistochiton palmulatus Carpenter 25G
Callistochiton crassicostatus Pils.10K
Callistochiton decoratus Carpenter 25G
Chaetopleura gothica Carpenter 25G
Chaetopleura thamnopora Berry 25G
Chaetopleura prasinata Carp. 50Rock
Mopalia imporcata Carpenter 25G
Mopalia muscosa acuta Carp. 25G
Mopalia pedroana Willett 25G
Placiphorella velata Carp. 25G

Gastropoda

Actaeon punctocoelatus Carp. 25G
Microglyphis breviculus Dall 75M
Retusa harpa Dall 25G
Acteocina culcitella Gould 25G,M
Acteocina culcitella intermedia Willett 75M
Acteocina carinata Carp. 25G
Acteocina inculta Gould 25G
Acteocina planata Carp. 25G
Volvulella californica Dall 75-100M
Volvulella cooperi Dall 75-100M
Volvulella cylindrica Carp.25G,50M
Diaphana californica Dall 10S
Cylichna attonsa Carp. 25G
Cylichna diegensis Dall 25G
Siphonaria brannani Stearns 15S
Willamia peltoides Carp. 25G
Willamia vernalis Dall 25G
Terebra pedroana Dall 25G
Terebra p. philip iana Dall 10-25S
Conus californicus Hinds 10S-25G
Borsonia bartschi Arnold 50G
Surculites carpenterianus Gabb 25M
Surculites tryonianus Gabb 25G
Surculites remondii Gabb 25G,50M
Clavus empyrosia Dall 50G
Clavus halocydne Dall 25G
Clavus hemphilli aeolia Dall 10S
Moniliopsis grippi Dall 10K
Moniliopsis incisa ophioderma Dall 10S
Moniliopsis fancherae Dall 25G
Pseudomelatoma seminflata redondoensis Burch 25G
Spirotropis perversa Gabb 75M
Spirotropis rotula Dall 50G
Spirotropis santarosana Dall 75M
Spirotropis thalea Dall
Bellaspira grippi Dall 10S,25G
Lora kyskana Dall 75M
Mangelia arteaga roperi Dall 25-75 GM
Mangelia gracilior Hemphill 10S,25G
Mangelia hexagona Gabb 10S,25G
Mangelia variegata Carpenter 10-75 GM
Mangelia crassaspera Grant & Gale 50M
Mangelia aspera Carpenter 25G
Clathurella cymodoce Dall 75M
Clathurella conradiana Gabb 25G
Philbertia crystallina Gabb 100M
Taranis strongi Arnold 100M
Admete gracilior Carpenter 100M
Admete rhyssa Dall 75-100M
Cancellaria cooperi Gabb 25S
Cancellaria crawfordiana Dall 50M
Olivella baetica Carpenter 10S,25G
Olivella biplicata Sowerby 10S,25G
Hyalina subtrigona Carpenter 25G
Hyalina pyriformis Carpenter 25G
Mitra catalinae Dall 10S,25G
Mitra idae Melville 10S
Mitra montereyensis Berry 50-75G
Mitra montereyensis Berry 50-75G
Fusinus arnoldi Cossmann 25G
Fusinus barbarensis Trask 50G
Fusinus luteopictus Dall 15G
Kellettia kellettii Forbes 25G
Drupa lugubris C.B. Adams 25G
Neptunea tabulata Baird 75M
Engina strongi Pils. & Lowe 50G
Nassarius cooperi Forbes 25G
Nassarius mendicus Gould 25G
Nassarius insculptus Carpenter 25-75G
Nassarius perpinguis Hinds 10S,25G
Anachis penicillata Carpenter 25G
Mitrella carinata Hinds 25G
Mitrella gausapata Gould 25G
Mitrella gouldi Carpenter 50-100M
Mitrella tuberosa Carpenter 25G
Amphissa bicolor Dall 100-125M
Amphissa reticulata Dall 25G
Amphissa undata Carpenter 25G
Amphissa versicolor incisa Dall 25G
Aesopus chrysalloides Carp. 10S,25 G
Aesopus sanctus Dall 25G
Murex festivus Hinds 25G
Murex petri Dall 50G
Murex rhyssa Dall 25G
Murex santarosana Dall 25G
Tritonalia barbarensis Gabb 25G
Tritonalia circumtexta Stearns 25G
Tritonalia epiphanea Dall 25G
Tritonalia foveolata Hinds 25G
Tritonalia gracillima Stearns 25G
Tritonalia interfossa clathrata (Stearns) Dall 25G
Tritonalia lurida Middendorff 25G
Tritonalia painei Dall 75G
Trophon albospinosus Willett 25G
Trophon bentleyi Dall 75M
Trophon tenuisculptus Carp. 50G
Trophon orpheus Gould 75M
Trophon triangulatus Carp. 25G
Forreria belcheri Hinds 25G
Forreria catalinensis Oldroyd 75M
Coralliophila oldroydi Oldroyd 25G
Epitonium acrostephanum Dall 75M
Epitonium bellastriatum Dall 25G
Epitonium californicum Dall 25G
Epitonium catalinae Dall 75G
Epitonium catalinensis Dall 25G
Epitonium cooperi Strong 25-75G
Epitonium denisclathratum Sall 50M
Epitonium evictum De Boury 25G
Epitonium indianorum Carp. 25G

Epitonium rectilaminatum Dall 25g
Epitonium retiporosum Carp. 25-75G
Epitonium sawinae Dall 25-75G
Epitonium spongiosum Carp. 25G

Epitonium tabulatum Dall 25G
Epitonium tinctum Carp. 25G
Melanella catalinensis Bartsch 25-100G
Melanella micans Carp. 25G
Melanella oldroydi Bartsch 25G
Melanella rutila Carp. 25-100 M
Melanella thersites Carp. 25G
Strombiformis californicus Bartsch 75M
Turbonilla adusta Dall & Bartsch 25G
Turbonilla almo Dall & Bartsch 10S,25G
Turbonilla antestriata Dall & Bartsch 10S,25G
Turbonilla aragoni Dall & Bartsch 25G
Turbonilla aresta Dall & Bartsch 25G,75M
Turbonilla asser Dall & Bartsch 10S,25G
Turbonilla attrita Dall & Bartsch 10S
Turbonilla buttoni Dall & Bartsch 10S,25G
Turbonilla burchi Gordon 25G
Turbonilla canfieldi Dall & Bartsch 25G
Turbonilla castanea Keep 25G
Turbonilla castanella Dall 25G
Turbonilla chocolata Carp. 15S,25-75G
Turbonilla gouldi Dall & Bartsch 10S
Turbonilla halia Dall & Bartsch 10S
Turbonilla hypolispa Dall & Bartsch 10S
Turbonilla jewetti Dall & Bartsch 10S
Turbonilla laminata Carp. 25G
Turbonilla lowei Dall & Bartsch 25G
Turbonilla morchi Dall & Bartsch 25G75M
Turbonilla pedroana Dall & Bartsch 10S
Turbonilla pentalopha Dall & Bartsch 25G
Turbonilla profundicola Dall & Bartsch 75M
Turbonilla regina Dall & Bartsch 25G,75M
Turbonilla signae Dall & Bartsch 10S,25G
Turbonilla simpsoni Dall & Bartsch 25GS
Turbonilla stylina Carp.10S,25G,75M
Turbonilla tenuicula Gould 10S,25G
Turbonilla torquata Gould 25G,75M
Turbonilla tridentata Carp. 10S,25G
Turbonilla valdezi Dall & Bartsch 25G
Turbonilla vexativa Dall & Bartsch 25G
Turbonilla weldi Dall & Bartsch 25G,75M
Turbonilla sp.-25G,50G,75G,75-100M
Odostomia amianta Dall & Bartsch 50-75M
Odostomia angularis Dall & Bartsch 25G
Odostomia californica Dall & Bartsch 25G
Odostomia canfieldi Dall 15S
Odostomia dinella Dall & Bartsch 25G,100M
Odostomia donilla Dall & Bartsch 10S,25G
Odostomia eugena Dall & Bartsch 25-75G
Odostomia farallonensis Dall & Bartsch
50-100 M
Odostomia fetella Dall & Bartsch 10S
Odostomia helena Bartsch 25-50G
Odostomia helga Dall & Bartsch 25G
Odostomia io Dall & Bartsch 25-50G
Odostomia lastra Dall & Bartsch 25G
Odostomia nemo Dall & Bartsch 25G
Odostomia nota Dall & Bartsch 25G
Odostomia phanea Dall & Bartsch 25G
Odostomia phanella Dall & B. 25G
Odostomia subturrita Dall & B. 15S
Odostomia talma Dall & B. 75M
Odostomia tenuisculpta Carp. 25G
Odostomia trachis Dall & B. 75M
Odostomia valdezi Dall & B. 50M
Odostomia virginalis Dall & B. 25G
Odostomia sp. 100M,125M
Simnia barbarensis Dall 50-75GM
Cypraea spadicea Swainson 25G
Trivia ritteri Raymond 25G
Erato vitellina Hinds 25G
Erato columbella Menke 25G
Bursa californica Hinds 25G,50M
Triphora pedroana Bartsch 25G
Cerithiopsis alcima Bartsch 15S
Cerithiopsis antefilosa Bartsch 25G
Cerithiopsis antemunda Bartsch 50M
Cerithiopsis carpenteri Bartsch 25G
Cerithiopsis cosmia Bartsch 25G
Cerithiopsis oxys Bartsch 75M
Cerithiopsis diegensis Bartsch 25G
Metaxia diadema Bartsch 25G
Seila montereyensis Bartsch 25G
Bittium asperum Gabb 50M
Bittium catalinense Bartsch 75-100M
Bittium interfossa Carp. 75M
Bittium larum Bartsch 25G
Bittium purpureum Carp. 25G
Bittium subplanatum Bartsch 75-100M
Caecum californicum Dall 25G
Caecum licalum Bartsch 25G
Micranellum crebricinctum Carp.10S,
25g-50G
Bivonia compacta Carpenter 25G
Turritella cooperi Carp.25G,50G,75G
Tachyrhynchus pratomus Dall 100M
Lacuna unifasciata Carp. 25G-K
Iselica fenestrata Carp. 25G
Alvania acutilirata Carp. 25G
Alvania californica Bartsch 25G
Alvania compacta Carp. 25G
Alvania pedroana Bartsch 100M
Alvania rosana Bartsch 25-75G
Rissoina coronadoensis Bartsch 75M
Rissoina kelseyi Dall & Bartsch 25G
Capulus californicus Dall 25-50G
Crepidula excavata Broderip 25G
Crepidula norrisiarum Williamson
(on Norrisia fr kelp)
Crepidula nummarius Gould 25G
Crepidula glottidiarum Dall 25G
(on Glottidia albida Hinds)
Crepidula onyx Sowerby 25G
Crepidula lingulata Gould 25G
Calyptraea fastigiata Carp. 50-75G

Calyptraea contorta Carp. 25G
Verticumbo charybdis Berry 75G
Natica salimba Dall 100M
Natica sp. 75G
Polinices acosmitus Dall 100M
Polinices draconis Dall 25G-75M
Polinices lewisii Gould 10S-25G
Polinices pallidus Brod. & Sby. 100M
Polinices recluzianus Deshayes 10S-25G
Sinum scopulosum Conrad 25G,75M
Exiloidea rectirostris Carp. 75G
Acmaea mitra Eschscholtz 75G
Acmaea paleacea Gould 25G
Acmaea rosacea Carp. 25G
Tricolia pulloidea Carp. 25G
Tricolia subturrita Carp. 25G
Astraea inaequale Martyn 25G
Astraea undosa Wood 10S
Homalopoma carpenteri Pilsbry 25G
Homalopoma paucicostata Dall 50G
Liotia fenestrata Carpenter 25G
Liotia acuticostata Carp. 25G
Norrisia norrisii Sowerby K
Calliostoma annulatum Martyn 25G
Calliostoma canaliculatum Martyn 25G
Calliostoma gemmulatum Carp. 10 G
Calliostoma gloriosum Dall 25G
Calliostoma splendens Carp. 25G
Calliostoma tricolor Gabb 25G
Calliostoma turbinum Dall 75M
Halistylus subpoideus Tryon 10S,25G
Margarites parcipictus Carpenter 25G
Margarites pupillus Gould 50M
Solariella peramabilis Carp.50-75M
Cidarina cidaris A. Adams 75M
Turcica caffea Gabb 25G
Vitrinella berryi Bartsch 15S
Vitrinella stearnsii Bartsch 25G
Teinostoma invallata Carp. 15S
Haliotis assimilis Dall 25G
Diadora murina Carp. 25G
Diadora aspera Eschscholtz 25G
Puncturella cooperi Carp. 25G
Puncturella cucullata Gould 25G,50M
Puncturella galeata Gould 50-75G

Pteropoda

Spiratella pacifica Dall 25G

Pelecypoda

Solemya johnsoni Dall 50M
Solemya panamensis Dall 50-100M
Acila castrensis Hinds 50-75M
Nucula exigua Sowerby 15S
Nucula tenuis Montagu 50-100M
Nuculana acuta Conrad 25G
Nuculana cellulita Dall 50G
Nuculana hamata Carp. 50-75 M
Nuculana minuta lomaensis Dall 50G
Nuculana oxia Dall 75M
Nuculana taphria Dall 10S,25G
Yoldia scissurata Dall 50-100M
Glycimeris septentrionalis Midd. 25S
Glycimeris sp. 25S
Ostrea lurida Carpenter 25G
Pecten multirugosus Gale 25G
Pecten diegensis Dall 25-50G
Pecten hastatus Sowerby 25G
Pecten pugetensis Oldroyd 25G
Pecten latiauritus Conrad 25G
Pecten latiauritus monotimeris Con. 25G
Pecten randolphi Dall 50G
Pecten catalinensis Willett 75-100 M
Pecten vancouverense Whiteaves 75-100M
Lima dehiscens Conrad 25G
Lima subauriculata Montagu 15-25S
Pododesmus macroschismus Desh. 25G
Volsella fornicata Carp. 25G
Volsella pallidula Dall 50M
Volsella opifex Say 25G
Volsella recta Conrad 25G
Crenella columbiana Dall 25-50G
Crenella divaricata d' Orbigny 25SG
Periploma discus Stearns 50M
Thracia trapezoides Conrad 75M
Thracia undulata Conrad 25G
Pandora bilirata Conrad 25G
Pandora filosa Carpenter 75M
Pandora punctata Conrad 25G
Lyonsia californica Conrad 15S-25GM
Lyonsia gouldii Dall 25G
Entodesma inflatum Conrad 25G-50M
Poromya tenuiconcha Dall 50G
Cuspidaria apodema Dall 50-75M
Cuspidaria beringensis Leche 75M
Cuspidaria californica Dall 50-75M
Cuspidaria pectinata Carp. 25G-75M
Cuspidaria planetica Dall 50-75M
Verticordia ornata d' Orbigny 50-75M
Cardita ventricosa Gould 25G
Glans minuscula Grant & Gale 25G
Cardita sp. 50M
Chama pellucida Sowerby 25G
Pseudochama granti Strong 25g-50G
Thyasira barbarensis Dall 75M
Axinopsis viridis Dall 75M
Diplodonta subquadrata Carp. 25G
Lucina acutilineata Conrad 25G-75M
Lucina approximata Dall 25GS
Lucina nuttallii Conrad 25GS
Lucina californica Conrad 25G
Kellia laperousii Deshayes 25G
Aligena redondoensis Burch 75G
Rochefortia aleutica Dall 75M
Erycina sp. 75G
Bornia retifera Dall 10S
Nemocardium centifilosum Carp.25G-75M
Americardia biangulata Sowerby 25G
Laevicardium substriatum Conrad 25G
Trachycardium quadragenarium Conrad 25G

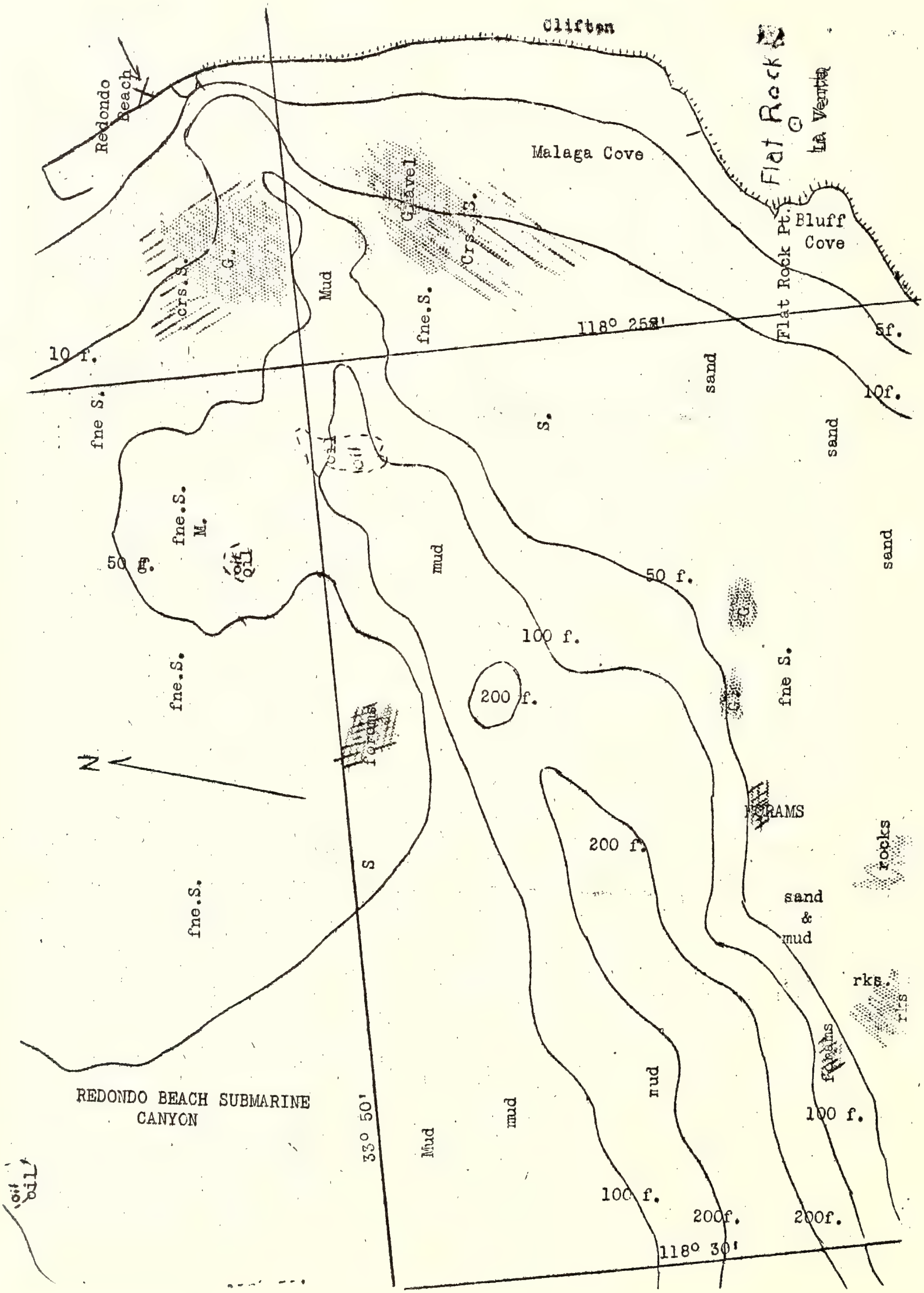
Tivela stultorum Mawe 10S
Venus fordi Yates 10S-25G
Saxidomus nuttallii Conrad 10S-25G
Chione succinta Valenciennes 25G
Chione undatella Sowerby 25G
Venerupis tennerima Carp. 25G
Venerupis staminea Conrad 25G
Clementia subdiaphana Carp. 25G,50M
Psephidea ovalis Dall 25G
Psephidea brunnea Dall 25G
Petricola tellimyalis Carp. 25G-(K
Petricola carditoides Conrad 25G
Petricola californiensis Pils. & Lowe 25G
Cooperella subdiaphana Carp. 25G
Tellina idae Dall 25G-50M
Tellina salmonea Carp. 10S
Tellina carpenteri Dall 25G,50M,-100M
Tellina modesta Carp. 10S-25G
Apolymetis biangulata Carp. 25G
Macoma carlottensis Whiteaves 50-100M
Macoma indentata Carp. 25G
Macoma indentata tenuirostris Dall 75M
Macoma nasuta Conrad 10S-25G
Macoma planiuscula Grant & Gale 75M
Macoma secta Conrad 25G
Macoma yoldiformis Carp. 10S-25G
Semele incongrua Carp. 25G
Semele rubropicta Dall 25G
Cumingia lamellosa Sowerby 25G
Donax gouldii Dall 10S
Gari californicus Conrad 25G
Gari edentula Gabb 25G
Tagelus californianus Conrad 10-25G
Tagelus subteres Conrad 10-25G
Solen sicarius Gould 25G
Solen rosaceus Carpenter 25G
Ensis californicus Dall 25G
Siliqua lucida Conrad 10S-25G
Mactra californica Conrad 10S
Mactra dolabriformis Conrad 10S
Mactra falcata Gould 25G
Mactra hemphilli Dall 25G
Mactra planulata Conrad 25G
Cryptomya californica Conrad 10-50M
Corbula luteola Carp. 25G
Saxicava arctica L. 25G-100R
Panope generosa Gould 25G
Saxicavella pacifica Dall 75G
Xylophaga californica Bartsch 25G (wood)

Scaphopoda

Dentalium neohexagonum Sharp & Pils. 10S,25G,50-75M
Dentalium numerosum Dall 25G,75G
Dentalium rectius Carp. 50-75M
Dentalium semipolitum Brod. & Sowerby 10S
Dentalium vallicolens Raymond 75GM
Dentalium watsoni Sharp & Pilsbry 125M
Cadulus californicus Pilsbry & Sharp 75M
Cadulus fusiformis Pilsbry & Sharp 10S,25G,50-100M
Cadulus hepburni Dall 75M
Cadulus quadrifissatum Pilsbry 10-25S
Cadulus stearnsii Pilsbry & Sharp 75-100M
Cadulus tolmei Dall 150M
Cadulus sp. 25G

Brachiopoda

Glottidia albida Hinds 10S-25G
Laqueus californicus Koch 50-75G
Terebratalia transversa Sowerby 25-50G
Terebratalia occidentalis Dall 50G
Terebratulina crossei Davidson 50-75GR
Terebratulina unguicula Carp. 75G


REDONDO BEACH SUBMARINE CANYON
Clifton
Redondo Beach
Malaga Cove
Flat Rock
La Venta
Flat Rock Pt.
Bluff Cove
Gravel
crs. S.
G.
Crs. S.
Mud
fne. S.
118° 25'
10 f.
5f.
10f.
sand
S.
fne S.
fne. S.
M.
Oil
50 f.
mud
100 f.
200 f.
G.
forams
FORAMS
N
rocks
sand & mud
rks.
S
33° 50'
Mud
oil
118° 30'
200f.

File 3111

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 18.

December 1942

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or some 1½¢ stamps.

All members are urged to attend the next meeting, Dec.1, at Clifton's Cafeteria, 648 S. Broadway, Los Angeles. We meet in the Pine Room. Many of the members meet at 6:30 P.M. for dinner, but others merely drop in for the meeting which convenes at 7:30 P.M.

Mr. E.J. Post will report on " Collecting in Florida" and Mr. Gillett Bechtel on " Teredo".

The annual exchange of Christmas packages will be held.

Minutes of the November meeting.

The Conchological Club of Southern California met as usual, Nov. 3, 1942. There were 20 members present including two members who have not met with the club of late, Mrs. Carrie Robinson of Manhattan Beach and Mr. T.W. Robinson of El Segundo, Calif. One of those present, Harold W. Harry of the U.S. Naval Hospital, Corona, Calif., wearing uniform, was duly elected to membership.

It was voted to expend $1.00 for club stationary, the present supply being at very low ebb and the order was placed.

The election of officers for 1943 resulted as follows:

President- E.P. Baker
Vice-president- Mrs. E.P. Chace
Sec.-Treasurer- Mrs. Effie M. Clark

John Q. Burch was requested by a vote of the club to continue his much appreciated work as news reporter for the club's news items and minutes.
A communication was read from Dr. Myra Keen of Stanford University.

It was decided by a vote of the club that due to war conditions and the rationing that the list of club members be continued as of last year with the addition of the names of those who have joined this year.

But one paper was given because one of those slated to appear, Mr. Albert Bauman, is now in the U.S. Army.

Mr. George Willett gave a paper whose subject was " Limpet-like Mollusks ". It was very interesting to learn that there were so many of these of which most of us knew so little or nothing and had not even seen in other collections. His illustrative material will put many of us on the lookout in unexpected places for these little known or unusual limpets or near limpets, though we are warned that many of them are in far away waters, and none of them are common or easy to obtain. The meeting was duly adjourned.

Effie M. Clark, Secretary.

PLEASE mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Mr. William G. Fargo of Jackson, Michigan has advised us that after Dec.1 his address will be Box 874, Pass-a-Grille Beach, Florida. He has sent us express prepaid a fine box of shells for distribution to the membership with his compliments. They will be given out at the next meeting. While Mr. Fargo is not soliciting exchanges any student may feel free to ask his assistance on his problem as it affects West Florida.

Mr. Edward P. Burch, 1729 James Ave., S., Minneapolis, Minn. has been made curator of shells at the Minnisota Museum of Natural History.

Walter Lincoln Brown 1866--1942

Shell collectors all over the United States have lost a friend in the sudden passing of Walter Lincoln Brown who died at Hermosa Beach, California, on Sept. 23,1942.

Although his parents were Maine people, Mr. Brown was born in Watertown, Mass. in 1866. He had lived in Southern California for nearly forty years and been a member of the Conchological Club of Southern California since. Sept. 1919.

Circumstances made it impossible for Mr. Brown to do a great deal of field work but he exchanged widely and for some years his place of business has been a gathering place for collectors of both shells and postage stamps. In both lines beginners and those more advanced found him a helpful and generous friend.

Mr. Brown is survived by his widow, Mrs. Myra W. Brown, who has the sympathy of Mr. Brown's many friends in her loss.

Pvt. F.M. Bayer, 309th Technical School Squadron, Flight 541, Kessler Field, Mississippi, has advised us that the above address will serve during the period of his basic training. Needless to mention that all soldiers like to receive letters and Ted will be glad to have his many friends drop him a note.

We were glad to hear from Mrs. Hattie Gemmell, 1304 Magnolia Ave., San Jose, Calif. While Mrs. Gemmell has a beautiful collection in all groups her specialty for many years has been Haliotis and there are probably few finer collections of this genus.

Our best wishes go with Mr. Truman Robinson, another of our members who is joining the merchant marine this month.

Mr. Conrad Limbaugh informs us that his correct address is now 707 S. Clark St., Bellflower, Calif.

Mr. Jack Brookshire also has a new address, 948 Beverley,Bellflower, Calif. Jack recently took a fine specimen of Ostrea laperousi Schrench at Corona Del Mar,Calif. on Nov.8. It is interesting to find this Japanese species propagating outside of Newport Bay where it was first introduced.

Mr. and Mrs. E.P. Baker took some exceptionally large specimens of Haminoea cymbiformis Carpenter near Pt. Vicente this month and also took Turbonilla tridentata Carpenter from Alamitos Bay near the bridge on Nov.7.

Dr. E.V. Edmonds honored us recently by drapping in for lunch. Such time as he has been able to spare from his professional duties has been devoted to classifying his collection of specimens from Hilltop Quarry. In this connection it might be well to mention that all members having Hilltop material should bear in mind that the Hilltop, one of the most interesting fossil exposures in Southern California , is definitely a record of the past. A new housing project is covering the location.

We received our first Christmas Greeting cards a little early, but it seems that mail from New Zealand and Australia is travelling even more promptly than in normal times. Needless to add we were happy to hear from them.

Mr. and Mrs. Edward Cameron announce that their new address is 690 E. Palm, Altadena, Calif.

Mr. Earl C. Huffman, 356 Stanton St., Pasadena,Calif. sent us a note and contribution. Earl has collected extensively in the Gulf of California and has promised to write up some of his collecting records for publication in these minutes. We hope to have them in early issues.

Some Limpet-like Mollusks of Western North America

by George Willett

The shells that I have chosen to discuss are of several families, some of them taxonomically very different, but with certain similarities in general appearance. The species selected for consideration are mostly those that have been found by few California collectors, and consequently may prove of interest to the members of the club. The genus Acmaea, so well known to all shell collectors , will not be discussed excepting in comparison with other genera.

The genera so close to Acmaea in external shell characters as to be indistinguishable excepting in the embryonic stage, are Lepeta and Cocculina. These are both stated to differ from Acmaea in that the embryonic shell is spiral instead of conical; also,the animals of both are said to be without eyes, in contrast to Acmaea, which usually possesses these organs. Furthermore, lateral teeth are three in number in Acmaea,four (three of which are very small) in Cocculina, and wanting entirely in Lepeta. I have not personally examined the anatomy of these genera, neither have I found specimens small enough to show the nuclear characters, these latter always being obliterated by erosion very early in the life of the mollusk. The differentiating morphological characters mentioned here are all quoted from observations of more thorough students. A natural question would be how I have separated them in my collection. The answer to this is that if these three genera had been collected together , I should certainly have failed to distinguish Cocculina from the young of Acmaea, and nothing but lighter color (certainly not a generic character) would separate Lepeta. However, there does appear to be a difference in the bathymetric ranges of the three genera. As all collectors know, Acmaea is primarily a littoral shell, most species not ranging very far below the low-tide line; Lepeta is most common in from 10 to 30 fathoms, and Cocculina is known only from considerably deeper water.

My specimens of Cocculina are from a depth of 70 fathoms in southeastern Alaska, and the only reason that they were not discarded as young Acmaeas at the time of their collection was because of my realization that Acmaea did not belong in that depth of water, particularly at such latitude. Two species of this genus are recorded from the Atlantic Ocean and two more from the Pacific, all from deep water.

Three species of Lepeta are recorded from the north Pacific, one, caecoides Carpenter, occuring south to the Farallon Islands,California. I have collected only one species, concentrica, which is rather common in moderate depths in Alaskan waters. The sculpture and proportions are quite variable in this species, and I doubt whether Lepeta alba Dall is distinct from it. Its light color,inside and out, readily distinguishes it from most Acmaeas.

Resembling the limpets somewhat in shell characters are the members of the genus Hemitoma. Anatomical characters, particularly as regarding the foot, indicate that this genus is relatively close to the key-hole limpets of the genus Puncturella. The shell, however, lacks the apical opening of Puncturella, and has an interior channel, producing an external ridge, from the apex to the anterior margin. The nucleus is said to be spiral. Hemitoma bella Gabb, 1865 and H. yatesi Dall,1901, were both described from Monterey. The series that I have collected in California and Alaska shows these two supposed species to be identical, the alleged characters being due to difference in age. Hemitoma bella is usually dredged , but I obtained one living specimen at Forrester Island, Alaska , at extreme low tide. My largest specimen is 75 millimeters in length by 55 in diameter. H. golischi Dall, from San Nicolas Island , looks very much like an imperforate Fissurella.

Among the air breathers, Order Pulmonata, are placed three genera of mollusks that are outwardly much like limpets. These are Gadinia,Siphonaria, and Williamia. The two former are common between tides, Gadinia reticulata Sowerby being found along most of the California and Lower California coast, and siphonaria thersites Carpenter , our only common member of the genus , occuring from Puget Sound north to southern Alaska. Siphonaria(?) brannani Stearns is apparently an uncommon species. My single specimen comes from 15 fathoms off Malaga Cove and the Burches list it from the same depth off Redondo Beach. Our two species of Williamia , vernalis Dall and peltoides Carpenter, both occur down to at least 25 fathoms, which would appear to be a considerable depth for air breathers. I should not be surprised if further study of the three species last mentioned should show that some or all of them have been misplaced.

The last group to be considered at this time are the two allied genera, Lamellaria and Velutina. The former genus, being of more southern distribution, is well known to most members of the club. It is usually found near the low tide line , but I have one specimen from as deep as 20 fathoms. It is apparently not very common anywhere. Velutina is similar to Lamellaria, but is rougher and darker colored. Its range in the eastern Pacific is given as ' from Monterey north to the Arctic Ocean'. I have not seen all the species ascribed to this genus, but those that I have examined fall readily into two very distinct groups , each possessing what appear to me to be characters of generic distinction. One group, of which V. laevigata (Linnaeus) Muller is the best known and most widely distributed species, has a hairy epidermis and the animal is contained in the shell. The other group, made up of such species as V. cryptospira Midd. and prolongata Carpenter, has a smooth epidermis and, in life, the shell is entirely covered by the animal. Velutina laevigata is known to range from Monterey to the Arctic Ocean, also in the Atlantic. I have found numerous living young specimens at the low-tide line,but most of my larger ones were dredged in fairly shallow water. The only locality where I have taken living specimens of the smooth Velutinas in any numbers is Forrester Island, Alaska, and most of these were secured in one very limited spot. An outlying, rocky islet had apparently split in two near the middle, leaving a straight-walled crevasse from 10 to 15 ft. in width, with a depth of water of from 30 to 40 ft.. On the rare occasions when extremely smooth weather coincided with a low tide, I was able to get into this crevasse with a row boat. The smooth rock walls at the low tide line were well covered with compound ascidians and other similar growth, and here were found two species of Velutinas, prolongata Carpenter and a small, red species, to which I gave the name of rubra. The shells of these being entirely covered by the animal, they were slug like in appearance and slippery to handle, and in trying to collect them and at the same time keep the boat steady on the rise and fall of the surge, more than one fine specimen was lost over the side.

Among other west American mollusks having limpet-like shells are such genera as Capulus,Hipponix, the various so-called 'key-hole' limpets, and the genetically very different Tylodina, of the order Opisthobranchiata. Although the shells of some of these are more limpet-like than those of others already discussed, they are too well known to club members to justify detailed comments at this time.

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Mr.Allyn Smith, 722 Santa Barbara Road, Berkeley, writes that he hopes to complete and publish their Monterey paper early next year. Allyn and McKenzie Gordon have been working on this project for several years and many of us have Monterey material laid aside with question marks pending the arrival of this paper.

Allyn also gives your reporter a little encouragement as follows:

" You are doing a fine job with the minutes of the meetings of your club. More power to you and keep up the good work. Of course you have had criticism, but dont let it get you down. It is quite true that these minutes have become ' part of the record'. They should. But I have little patience with those who insist on absolute accuracy in an informal publication such as the minutes you issue for the Southern California Club. My advice would be to let the sticklers for absolute accuracy in taxonomy howl. It seems to me they fail to appreciate the purpose of your minutes, which, as I see it, is merely to keep up the interest in the club, make its proceedings a matter of record, and publish papers or reviews and other interesting items that all of us in the game are glad to see and welcome."

We were glad to hear from Mrs. J.E. Coley, 93 Chetwood Terrace, Fanwood, New Jersey. Mrs. Coley made many friends while visiting her sister, Mrs. Ferris of Long Beach. Mr. Coley is entering the U.S. Navy. Another note in her letter follows:" It might be of interest to you to know that the Coast Guard have taken over Sanibel Island and our friend, Bing Miller, has had to leave the island for the duration."

A few notes from a letter written by our secretary, Mrs. Effie Clark should interest our fossil hunters. " Do you know of a fossil outcrop on Figueroa St. Mr. Quayle said some students brought in some material but forgot to look at the cross streets. It is evidently very southern and Dosinia etc. are very interesting. I spotted a streak on Vermont as we were out friday and it looks interesting. Mr. Quayle called it the "Anomia Bed" which is a good name indeed for there are quantities of Anomias there (both valves) and quite a few Arca perlabiata."

We wish to acknowledge and thank the following for their generous contributions to assist in the cost of mimeographing these minutes : Dr. H.A. Pilsbry, Dr. Paul Bartsch, Dr. H.A. Rehder, Dr. L.G. Hertlein, Dr. F.M. MacFarland, Dr. D. S. Gifford, Mrs. Harold R. Robertson, Dr. C. Goodrich, Dr. Myra Keen, Miss R.E. Coats, Ralph W. Jackson, Mrs. Hattie Gemmell, Walter J. Eyerdam, Allyn Smith, Mr. and Mrs. Fred Barnett, W.P. Cook, Edna M. Marsden, Natural History Museum of San Diego, Museum of Zoology of University of Michigan, Wm. G. Fargo, Carl I. Thomas, Aldrich Museum, Miss Edna Wilson, Will H. Galbreath, A. Sorensen, Prof. Trevor Kincaid, Miss A. Koto, Edith R. Knapp, Dr. B.R. Bales, Morris Schick, C.L. Blakeslee, Mrs. Kate Stephens, Chester Melville, Mr. and Mrs. F.K. Hadley, Dr. Clinton D. Hubbard, Mr. and Mrs. Ralph Borman, Earl Huffman, Morris E. Jacobsen.

Our members who are not members of the American Malacological Union may find the following of interest. The A.M.U. decided to cancel annual meetings for the duration. The president, Frank Collins Baker died last May 7. Dr. Louise M. Perry, Vice-President succeeds to the presidency. The annual reports will be published as usual. Mrs. Harold R. Robertson, 136 Buffum St., Buffalo, N.Y. has retired from the active staff of the Buffalo Museum of Science and is now Research Associate in Malacology. This honorary title carries with it continued supervision of the shell collection at the Museum and the use of the laboratory.

Haliotis fulgens turveri Bartsch 1942 was described in the current issue of the Nautilus. If any of our members are fortunate enough to possess a specimen of this subspecies your reporter would sincerely appreciate the priviledge of examining it.

This issue of the Nautilus also contains a fine paper by D.S. and E.W. Gifford on " Color Variation in Olivella Biplicata in Various Localities" and another by Mr. E.P. Chace " Field Notes on Some West Coast Mollusks". There is also an interesting paper in the Notes and News of the Nautilus by Dr. William Marcus Ingram, Mills College, Calif. " Habitat Data on Helminthoglypta tudiculata (Binney) at Balboa Beach, Calif."

We recently received Bulletin 181 of the United States National Museum by Carlos De La Torre, Paul Bartsch and Joseph P.E. Morrison titled " The Cyclophorid Operculate Land Mollusks of America". This splendid work of 306 pages should by all means be added to the libraries of all students of land shells.

We are in receipt of a very unusual and entertaining paper by Dr. Merrill Moore " A Note on Conchology" reprinted from The American Imago, Vol.3, No. 1 & 2, April, 1942.

File

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA NO. 19.

January 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or some stamps.

We have CHANGED our time and place of meeting. Hereafter, we will meet on the fourth sunday of each month in the afternoon.

All members are urged to attend the next meeting, Jan.22, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2 P.M.

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the December, 1942, meeting.

The Conchological Club of Southern California met as usual at Clifton's Cafeteria, 648 S. Broadway, Los Angeles, Dec. 1,1942.

The meeting was called to order by the President, and there were 19 members and 4 visitors present. The visitors were Mr. E.E. Hadley, 502 S. Palm Ave.,Alhambra, Miona Mackey, 3957 3/8 Menlo Ave., Los Angeles, Mrs. Fay Geff and Mrs. Maxine Smith,-grandmother and mother of Don Smith.

The following committees were appointed for 1943:

Nomenclature- A.M. Strong, George Willett and Dr. W.O. Gregg
Program- Dr. Howard Hill, Mrs. John Q. Burch and Mrs. George Willett
Press- John Q. Burch (Reporter), George Willett and E.P. Chace
Membership- Thomas A. Burch, Mrs. Laura Bagley and Mrs. E.P. Baker

A communication from a friend of Dr. Pilsbry disclosed that Dec.8 was the Doctor's 80th birthday as well as the 50th anniversary of his connection with the Philadelphia Academy of Science. By unanimous vote the secretary was directed to write him a letter of congratulations for the club.

The secretary was also directed to write Mr. Wm. Fargo thanking him for the box of beautiful shells that greatly delighted the members to whom it was to be distributed.

A letter was read from Dr. Schenck of Stanford University requesting specimens of the genus Thyasira if any of the members can supply them.

The first subject on the program was given by Mr. E.J. Post and the title was " Collecting in Florida". Off and on for 50 years he has collected Florida shells and made a trip there during the past year. He visited many of his old haunts, Clearwater Causeway, Tarpon Springs, Ft. Myers, West Palm Beach, Miami, St. Augustine and Sanibel Island. Many changes, natural, man made, and intensive collecting for commercial purposes have greatly reduced the number to be found in many places though many yet remain. The greatest difficulty in collecting is the transportation problem, due to rationing, and the great number of war personnel, so successful collecting will probably have to wait the ending of the war.

Mr. E.E. Hadley kindly consented to fill in for Gillette Betchel who could not be present. He gave a talk on the subject of Brachiopods- very, very old ones, so old that their time is recorded in millions of years. He brought for comparison a few of the living ones. His collection ranges from the Carboniferous down to the present. They were very abundant in the earlier ages but became greatly reduced from the Cambrian on as mollusks began to greatly increase. These shells in general look odd to those who are used to modern shells yet some of them have strong resemblances to some modern ones considering the great time that has elapsed between the ages.

The Christmas boxes were exchanged and the meeting then adjourned.

Effie M. Clark, Secretary.

The host of friends of Dr. H.A. Pilsbry are congratulating him this month. On tuesday, Dec. 8, Dr. Pilsbry will observe his eightieth birthday. This month also marks his fifty fifth anniversary in the Academy of Natural Sciences of Philadelphia, of which he is Curator of Mollusks and Other Invertebrates.

We were glad to have a visit with Mr. Richard C. Dinkins, 117 N. Las Palmas, Los Angeles. Mr. Dinkins was an active member of our club several years ago before leaving to study at Stanford University. He is now entering the aviation service of the U.S. Navy.

A welcome card was received from Mrs. W.H. Eshnaur calling attention to the fact that her street address has been changed from 920 to 932 Flower St., Bellflower, Calif.

Mr. Ernest Wilcox, an associate member of our club, calls attention to the fact that his address has been incorrectly printed in our 1942 membership list. It is 1738 Johnson Ave., San Luis Obispo, Calif. Mr. Wilcox is working on a paper dealing with the land and fresh water fauna of San Luis Obispo County. An extract from his letter may be of interest- " About half way between the Garden Farms and Atascadero there is a road that turns off from Highway 101 and goes east to the Salinas river over the S.P. track and then on up Calf Canyon to Creston. Just to the right of the railroad crossing there used to be a flag station and stockyard where cattle were loaded for shipment. It was called Eaglet (both flag station and stockyard are gone now but the name remains). The river comes quite close to the railroad here but just between the river and railroad a large water reservoir was scooped out and water pumped into it from the river. This was where I went snail hunting. The water was very low, and the muddy edge of the reservoir was lined with live and dead Lymnaeas, hundreds of them. The yellow leaves had fallen from the near by cottonwood trees into the water and on to the muddy bank, and under these leavesthe Lymnaeas were clustered as closely as cells in a honeycomb. I wondered at not being able to find any Physas here for Physa is the most abundant freshwater snail in the county, but after more than an hour's search I found but two dead shells With a crooked stick I pulled water plants out on the bank and so secured nearly a hundred fine specimens of Gyraulus. When I got back to the car and met Charles he had five quails and a cotton tail rabbit, so we each hunted successfully".

The following exceppt is typical of a great deal of our shell correspondence these days " you gave me some valuable information as to where and when I may find them. I mentioned the odd shells we had possessed at the time and are now yours. I probably will never learn what they are or their scientific value, if any, as I am now Private Herman Brod headed for parts unknown. We have quite a few other shells which I would like to add to your collection, that might prove interesting, but unless I will be in town this next week it will be very difficult to get them to you. In my travels as a soldier, who can tell, I may find some very interesting shells and I'm sure you will get an opportunity to add them to your collection."

We wish to express our appreciation for the generous contributions to our minutes from the following: Dr. Hubert G. Schenck, Stanford University- Mr. Fred S. Webber, 271 Maple St., Holyoke, Mass.- Gillett Betchel, 619 Victoria Ave., Venice, Calif.- Mr. H. Carroll Mc Gowan, 1230 Crescent Dr., Glendale- Mr. Henry Dodge, 6 Rochambeau Road, Scarsdale, N.Y.- Mr. Richard W. Foster, 70 Heath St.,Brookline, Mass. Mrs. Fred S. Hoffman, 390 Depew Ave., Buffalo, N.Y.- Mrs. H.R. Turver, 127 Broadway, Santa Cruz, Calif.

A few short notes from and about some of our members.

Charles W. Schlagel, 58 Hampden Terrace, Alhambra " I have been feeling somewhat improved in health lately but have not been able to attend any of the meetings. I may be able to after the start of the new year."

Miss Alice L. Waterbury,2235 Norwalk Ave., Los Angeles " Yes indeed. I will be glad to get the minutes for 1943".

Dr. Hubert G. Schenck of Stanford University has written a letter that is self explanatory. Any member able to assist with this material will of course do so. " I am very much obliged to you for sending me copies of the interesting minutes of the Conchological Club of Southern California. I have read them with a great deal of interest and I congratulate you and the members of the club for such scientific contributions. Enclosed is a small contribution toward issuing the next number.

One of my graduate students, Richard Mathews, is contemplating a study of the genus Thyasira. May I solicit the advice of your club ? The following are some points on which I should appreciate help.

1. If you were guiding this student, what program of investigation would you suggest
2. Do you know anyone who would be willing to donate living specimens, or specimens in spirits, for dissection ?
3. Do you know anyone who would be willing to donate shells of this genus for study? We are particularly anxious to get 30 or more specimens from a single collecting station. We shall be pleased to send material of other genera in exchange.
4. Could some collector supply data on the life habits, habitat, and other pertinent matters ?
5. When found as a fossil, what is the nature of the entombing sediment ?

Species of this genus have geological importance, and I believe that Mr. Mathews investigation might prove of interest in other ways as well. You may be sure that we value your assistance."

More notes from and about some of our members.

Gillett Betchel, 619 Victoria Ave., Venice, Calif. " I have received the minutes of the Conchological Club all through the past year and I have certainly enjoyed all of them. I will appreciate receiving them this year if you will send them. What with times as they are, I have not been able to attend meetings and I have not been collecting for months, but I am looking forward to having time for these again."

George P. Kanakoff- " My new address is 816 N. Normandie Ave., Hollywood, Calif. I do not visit the club because of a lack of interest, but because I am going through a very difficult period. Thank you for sending the minutes . With the first possibilities I will be back." My regards to the club members."

Virginia Putney-, 318 Griswold St.,Glendalem Calif. " I shall be glad ton continue receiving the club news. In fact, I have made a file of the club news that I have received. I am still very much interested in the club and hope that I shall be able to attend some of the meetings in the near future."

H. Carroll McGowan, 1230 Crescent Drive,Glendale, Calif. Mr. McGowan has been in the sanitarium for a year or more but advises that he is greatly improved."

Dr. W.O. Gregg, q2200 S. Harvard, Los Angeles, Calif. " Glad to hear from you again. I didn't get to the shell meeting last time as I was just too tired. My present program doesn't leave me any time for conchology. Have not even had time to continue the very interesting work I was doing on the life history of certain slugs. If you think it would be of interest I might write up an informal article on some of my observations on them. The long promised paper on the Planorbidae was something that just required too much time for my present program. Only got half of my vacation this year. Since I am supposed to have some more time coming I am going to take some time off next week and just rest up and get caught up on sleep. About the best we can do these days is to dream of the things we hope to do after the war is over."

Charles R. Wright, PHM 2/c, U.S. Naval Hospital, San Diego, Cal if. " I get the club minutes regularly and appreciate it very much as it is a tie to the enjoyable times of the past and hopes of the future. I've been doing my collecting in the line of books. I just ran across an 1854 edition of Sowerby's British Conchology. I'm working in the office of the Out Patients Department here at the Naval Hospital. It takes care of the dependents of naval and marine service. Please extend my regards to our fellow club members.

Kenneth L. Althaus, 319 E. 110th St., Los Angeles, Calif. " Yes- I'm still interested in shells but what with working 10 hrs. a day and no gas I just open my cabinets once in awhile and hope for the day when I can go collecting again."

SHELLS FROM MORRO BAY AND THE SHORES OF THE BAY

by Morris E. Caruthers

For a number of years I made collecting trips to the San Luis Obispo County coast and always found Morro Bay and the adjacent territory to be interesting and profitable ground for collecting. Each trip added some species which had not been found previously and always resulted in quantities of fine specimens for exchange.

The bay itself is easy of access as a great deal of shore line and most of the mud flats can be reached without difficulty; due precautions , of course, must be taken to avoid being caught by the rising tide as I was once. To reach the bay on the peninsula side it is necessary to have a boat, but I found that most of that shore line was rather barren of mollusks and hardly worth the effort.

Most of the shells in the list below are from the flats and shores of the bay itself. Several trips to the peninsula and the open ocean yielded only Siliqua patula nuttallii Conrad (plentiful at times), Adula diegensis Dall , and on one occasion, three fine living specimens of Chlorostoma montereyi Kiener.

On the peninsula, however, lives a rather rare land shell, Helminthoglypta walkeriana Hemphill, which lives under the mats of Messyambryanthemum (ice plant), but which takes a lot of searching to get a few shells.

North of the entrance of the bay at what used to be Willow Camp, two land shells, Haplotrema minima occidentalis Hemphill and Helminthoglypta umbillicata cayucosensis Pilsbry were to be found under leaves and dead brush, and Succinea avara Lea were taken in the damp hollows between Willow Camp and Morro Bay.

One noticible fact about the collecting is the number of species of Pelecypoda to be found, some 40 species being collected as against 33 species of the Gastropoda .

Olivella pycna Berry was not recognized although possibly some specimens may have been taken and distributed under the name O. baetica.

List of Species from Morro Bay, San Luis Obispo County, Calif.

Tagelus californianus Conrad
Solen sicarius Gould
Siliqua lucida Conrad
Siliqua patula nuttallii Conrad
Lucina nuttallii Conrad
Lucinoma annulata Reeve
Peronidia bodegensis Hinds
Quardia buttoni Dall
Cerastoderma corbis Martyn
Macoma nasuta Conrad
Macoma secta Conrad
" " ligamentina
Macoma calcarea Gmelin
Macoma indentata Carpenter
Macoma inquinata Deshayes
Saxidomus nuttallii Conrad
Panope generosa Gould
Zirfaea pilsbryi Lowe
Pholadidea penita Conrad
Pholadidea ovoidea Gould
Entodesma saxicola Bairs
Pachydesma stultorum Mawe
Protothaca staminea Conrad
" " laciniata Carp.
Protothaca tennerima Carpenter
Hinnites giganteus Gray
Mytilus californianus Conrad
Schizothaerus nuttallii Conrad
Pododesmus macroschisma Deshayes
Modiolus rectus Conrad
Modiolus flabellatus Conrad
Modiolus fornicatus Carpenter
Cryptomya californica Conrad
Sanguinolaria nuttallii Conrad
Lyonsia gouldii Dall
Hemimactra falcata Gould
Transenella tantilla Gould
Metis alta Conrad
Ostrea lurida Carpenter
Pseudochama exogyra Conrad
Schizopyga fossata Gould
" perpinguis Hinds
" " bifasciata Berry
" cooperi Forbes
Haminoea vesicula Gould
Crepidula onyx Sowerby
Crepipatella lingulata Gould
Acanthinucella spirata Blain.
" " punctulata Sby.
Calliostoma tricolor Gabb
" canaliculatum Martyn
" gloriosum Dall
Diadora aspera denisclathrata Reeve
Chlorostoma funebrale A. Adams
" montereyi Kiener
Hipponix antiquatus L.
Acteocina inculta Gould

(con. p 5)

Amphissa versicolor Dall
Columbella carinata Hinds
Acmaea scabra Gould
Acmaea limatula Carpenter
Cerithidea californica Haldeman
Euspira lewisii Gould
Polinices alta Dall
Littorina scutulata Gould
Littorina planaxis Philippi
Tethys californica Carpenter

Mopalia muscosa Gould
" " lignosa Gould
Lepidochitona hartwegii Carpenter
Calliostoma gemmulatum Carp.
Olivella biplicata Sowerby
Olivella boetica Carp.
Ischnochiton cooperi Carpenter

Lingula albida Hinds

33 Gasteropoda, 40 Pelecypoda, 1 Brachiopoda, 4 Chitona- 78 species & varieties

PARTIAL LIST OF MOLLUSKS FOUND IN MISSION BAY: SAN DIEGO: CALIF.

by Roy L. Morrison

Taken from a survey made in 1928;29 and 1930.

Gastropoda
Amphineura-
Lepidochitona hartwegii Carpenter
nuttallina californica Reeve
Mopalia muscosa Gould
Nudibranchiata-
Doriopsis fulva MacFarland
Dialula sandiegensis Cooper
Pleurphyllidia californica Cooper
Flabellina iodinea Cooper
Navanax inermis Cooper
Tethys californica Cooper
Laila cockerelli MacFarland
Chromodoris californiensis Bergh
Chromodoris macfarlandi Cockerell
Triopha carpenteri Stearns
Acanthodoris rhodoceras Cockerell and Elliott
Hopkinsia rosacea MacFarland
Mollusca
Acmaea cassis pelta Eschscholtz
" depicta Hinds
" insessa Hinds
" scabra Gould
" mitra Eschscholtz
" patina Eschscholtz
" persona Eschscholtz
" limatula Carpenter
Acteocina inculta Gould
Haminoea dalli Bartsch
" " exculpa Bartsch
" vesicula Gould
" virescens Sowerby
Bullaria gouldiana Pilsbry
Alectrion mendica Gould
" mendica cooperi Forbes
" perpinguis Hinds
" tegula Reeve
" fossata Gould
Crucibulum spinosum Sowerby
Bittium quadrifilatum Carpenter

Cerithidea californica Haldeman
Macron lividus A. Adams
Amphissa reticulata Dall
" versicolor Dall
Columbella carinata Hinds
" gausapata Gould
Conus californicus Hinds
Crepidula adunca Sowerby
" excavata Broderip
" lingulata Gould
" norrisiarum Williamson
" nummaria Gould
" onyx Sowerby
Melampus olivaceus Carpenter
Epitonium fallaciosa Dall
Diadora aspera Eschscholtz
" murina Dall
Fissurella volcano crucifera Dall
Megetebennus bimaculatus Dall
Janthina exigua Lamarck
Lamellaria diegoensis Dall
Hipponix antiquatus Linnaeus
" barbatus Sowerby
" tumens Carpenter
Gadinia reticulata Sowerby
Megathura crenulata Sowerby
Trophon belcheri Hinds
Kellettia kellettii Forbes
Bursa californica Hinds
Polinices lewisii Gould
Pyramidella conica Carpenter
Turbonilla buttoni Dall & Bartsch
Phasianella compta Gould
Leptothyra carpenteri Pilsbry
Aletes squamigerous Carpenter
Olivella biplicata Sowerby
" boetica Carpenter
Littorina planaxis Philippi
" scutulata Gould
Acanthina spirata Blainville
Calliostoma gemmulatum Carpenter

Turcica caffea Gabb
Pseudomelatoma moesta Carpenter
Clathrodrillia incisa ophioderma Dall
Tegula gallina Forbes
Tegula aureotinctus Forbes
Norrisia norrisii Sowerby
Tegula funebrale A. Adams
" " subapertum Carpenter
Murex festiva Hinds
Tritonalia poulsoni Carpenter
Polinices draconis Dall
" recluziana Deshayes
Astraea undosus Wood
Glottidia albida Hinds
Pelecypoda
Kellia laperousii Deshayes
Cooperella subdiaphana Carpenter
Donax gouldii Dall
" californica Conrad
Pododesmus macroschisma Deshayes
Cardium substriatum Conrad
Phacoides nuttallii Conrad
" californica Conrad
" annulata Reeve
Lima dehiscens Conrad
Diplodonta orbella Gould
Cardium quadragenarium Conrad
Pseudochama exogyra Conrad
Chama pellucida Sowerby
Saxicava arctica Linnaeus
Tellina buttoni Dall
" carpenteri Dall
Cumingia lamellosa Sowerby
Heterodonax bimaculata Linnaeus
Lyonsia californica Conrad
Mactrotoma nasuta Gould
" californica Conrad
Cryptomya californica Conrad
Macoma indentata Carpenter
" nasuta Conrad
" indentata tenuirostris Dall
Schizothaerus nuttallii Conrad
Cyathodonta dubiosa Dall
Metis alta Conrad
Modiolus flabellatus Gould
" rectus Conrad
" capax Conrad
Botula diegensis Dall
Mytilus edulis Linnaeus
" californianus Conrad
Septifer bifurcatus Conrad
Pecten latiauritus monotimeris Conrad
" " Carp.
" circularis Sowerby
" " aequisulcatus Carpenter
Tivella stultorum Mawe
Petricola denticulatum Sowerby
" carditoides Conrad
Ostrea lurida Carpenter
Hinnites giganteus Gray
Solen rosaceus Carpenter
Ensis californicus Dall
Siliqua lucida Conrad
Psammobia californicus Conrad
Semele pulchra Sowerby
" rupicola Dall
" decisa Conrad
Tagelus californianus Conrad
" subteres Conrad
Sanguinolaria nuttallii Conrad
Amiantis callosa Conrad
Pholadidia penita Conrad
Saxidomus nuttallii Conrad
Chione succinta Valenciennes
" undatella Sowerby
Zirfaea gabbi Tryon
Chione fluctifraga Sowerby
Macoma secta Conrad

Collected after the survey-
Murex trialatus Sowerby
Cypraea spadicea Swainson
Pyramidella adamsi Carpenter
Pteria sterna Gould (very rare)

Mr. Roy L. Morrison, 3745 Grim Ave., San Diego is with the science department of the Horace Man High School. The subject of his thesis at the University of Southern California was " Study of Mollusca Found in Mission Bay."

Shells (Alive and Dead) I have Found in Mission Bay
(shells found dead indicated)
by Miss Edna N. Wilson, 718 Capistrano Place, Mission Beach, Calif.

To supplement Mr. Mossison's list I add my own. There are, of course, many like Pitar newcombiana that live in deep water and come into the bay. I have found several but they do not belong. I have also found quite a few rare and interesting Chitons that I have not listed.

List con. p. 7

Acanthina spirata Blainville
Acmaea depicta Gould
" limatula Carpenter
Acteocina culcitella Gould 6/16/42
" cerealis Gould
" inculta Gould
Amphissa versicolor Dall
Anomia peruviana d' Orbigny
(just one specimen on dead shell)
Apolymetis biangulata (Carp.) (none alive)
Arca multicostata Sowerby
(not common- largest 3 3/4
Astraea undosa Wood (all juvenile)
Barleeia subtenuis Carpenter
Bittium quadrifilatum Carpenter
Bulla gouldiana Pilsbry
Bursa californica Hinds
Calliostoma gemmulatum Carpenter
" tricolor Gabb
Cardium biangulatum Sowerby
(3 alive in 1942)
Cardium quadragenarium Conrad
" substriatum Conrad
Ceratostoma nuttallii Conrad
Cerithidea californica Haldeman
Pseudochama exogyra Conrad
Chama pellucida Sowerby
Chione fluctifraga (Sowerby)
" simillima Sowerby
" succinta Valenciennes
Conus californicus (Hinds)
Cooperella subdiaphana Carpenter
Crepidula nummarius Gould
" lingulata Gould
" onyx Sowerby
Crucibulum spinosum Sowerby
Cryptomya californica Conrad
Cyathodonta dubiosa Dall (3 alive & dead x
Cypraea spadicea Swainson
Diplodonta orbella (Gould)
Donax californica Conrad
Ensis californicus Dall (rare)
Erato vitellina Hinds (alive)
Forreria belcheri Hinds (small)
Glottidea albida Hinds (not in
quantity since 1916)
Haminoea virescens (Sowerby)
Heterodonax bimaculata Linnaeus
Hinnites giganteus (Gray)
Ischnochiton conspicuus Carpenter
" clathratus Reeve (I. calif. Berry)
Kellettia kellettii Forbes
Kellia laperousii Deshayes
Lima dehiscens Conrad
Littorina planaxis Philippi
" scutulata Gould
Lucapinella callomaginata (Carp.)
Lucina nuttallii Conrad
Lyonsia californica Conrad

Macoma indentata Carpenter
" secta Conrad (young)
Mactra californica Conrad
" nasuta Gould
Megathura crenulata Sowerby (small)
Mitra catalinae Dall
" idae Melville (young specimens)
Mitrella carinata Hinds
" gausapata Gould
Modiolus capax Conrad
" rectus Conrad
Moniliopsis incisa ophioderma Dall
Mopalia muscosa Gould
Murex festivus Hinds
" trialatus (Sowerby) (not rare but
usually poor specimens)
Mytilus californianus Conrad
Nassarius fossatus Gould (small)
" mendicus Gould
" perpinguis Hinds
" tegula Reeve
Norrisia norrisii Sowerby
Nuttalina californica (Reeve)
Olivella baetica Carpenter
" biplicata Sowerby
Ostrea lurida Carpenter
" laperousi Schrenck (introduced-
(found on piling under causeway- large
4 to 5 inch specimen)
Panope generosa Gould (several young
live specimens)
Pecten aequisulcatus Carpenter
" circularis Sowerby
" digensis Dall (one young alive)
" latiauritus monotimeris Con
" latiauritus Conrad (washed into
bay on kelp)
Pitar newcombiana Gabb (dead spec.s
washed into bay)
Polinices alta Broderip
" imperforata Dall
" lewisii Gould
" recluziana Deshayes
Psammobia californica Conrad
Pyramidella adamsi Carpenter
Sanguinolaria nuttallii Conrad
Saxidomus nuttallii Conrad
Schizothaerus nuttallii Conrad
Semele decisa Conrad
" pulchra Sowerby
" rubropicta Dall (not alive)
Sinum californicum Oldroyd
Solen rosaceus Carpenter
Ensis californicus Dall
Tagelus californianus Conrad
" subteres Conrad
Tegula aureotincta Forbes
" lingulata Menke

Tellina buttoni Dall
" carpenteri Dall
" idae Dall (3 dead specimens but probably not washed into bay- largest $2\frac{1}{2}$ inches
Terebra pedroana Dall
Thracia curta Conrad
Tricolia compta Gould
Tritonalia poulsoni Nuttall
Turbonilla castanea Keep
Venerupis staminea Conrad
" " laciniata Carpenter
Zirfaea pilsbryi Lowe

We have at hand the latest issue of California Fish and Game- Vol.28,No.4 October, 1942. While there are as usual many articles of interest the reference to the mollusks in the article " The Latent Fisheries of Washington and Alaska" by Wilbert McLeod Chapman of the State of Washington Bureau of Fisheries should perhaps be noted. Mr. Chapman says " The green abalone (Haliotis wallalensis) occurs in abundance along the open coast of Washington and British Columbia. In Washington it supports no fishery whatever and it is probable that because of its habitat (rocky coasts mostly below mean low water) relatively few people know of its existence. While smaller in size ($5\frac{1}{2}$ to 6 inches) it is no less tasty than its southern relative, the red abalone, which is so highly esteemed in California."

" The fishery for Octopus produces about 50,000 pounds a year in Washington. The production could be increased many times if the market were developed. Nearly all the catch now comes from a restricted area around Port Angeles, although the abundance of the species is no greater there than elsewhere in Puget Sound. Few people realize how delicious chopped octopus is in chowder, cocktails, or salads."

" The sea cucumber (Stichopus californicus) forms the basis for a small fishery in Puget Sound, where it is canned as " rollops". The product is tasty but the fishery has never been developed to approach maximum productivity. The species is abundant throughout Puget Sound, and, for that matter, along the British Columbia and Alaska coasts. Sea cucumbers form the basis of an extensive fishery in the South Seas where they are dried under the name " Trepang". They are also considered something of a delicacy by the Alaskan natives."

Professor Trevor Kincaid, Department of Zoology, University of Washington has a fine article in this issue " The Biotic and Economic Relations of the Plankton".

In running faunal lists and other articles in these minutes your reporter naturally uses the nomenclature of the authors. The Conchological Club of Southern California in no way attempts to verify the taxonomy. We will be glad to receive any corrections or criticisms with the reasons for them.

Mrs. Mary Cornett, 2229 Griffin Ave., Los Angeles submitted the following:

See what a lovely shell
Small and pure as a pearl,
Lying close to my foot,
Frail, but a work divine.
Made so fairly well
With delicate spire and whorl.
How exquisitely minute,
A miracle of design.

What is it ?-- a learned man
Could give it a clumsy name.
Let him name it who can,
The beauty would be the same.

Tennyson.

With Tennyson's permission I (after many hours of study on the Olividae) have decided the four last lines should read thus,-

What is it ?-- a learned man
Has given it a clumsy name.
Let those pronounce it who can,
To me, - the beauty will be the same.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 20.
February 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or some stamps.

All members are urged to attend our next meeting, February 28, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

The following nice letter from Dr. Paul Bartsch was greatly appreciated :
" My dear Mr. Burch: This is just a little note to bring to the Conchological Club of Southern California the Greetings of the Season and to wish you another active year. I have enjoyed the Minutes greatly, and feel that your organization is doing a splendid piece of work. My congratulations, admiration, and Best Wishes"
Paul Bartsch, Curator,
Division of Mollusks and Cenozoic Invertebrates.

Dr. E.W. Gifford, Associate Professor of Anthropology and Curator of the Anthropological Museum, University of California, Berkeley, Calif., and Mrs. Gifford have been doing some very fine and intensive work on the west coast Olividae. While they have not requested that we do so, I feel certain that they will greatly appreciate receiving any unusual specimens of this family as well as any information regarding habitat and collecting localities. Dr. and Mrs. Gifford expect to be collecting in Southern California the first week of February.

In regard to the faunal lists from Mission Bay, San Diego, County, in the Minutes of January- #19, it has been your reporters intention to prepare a supplemental list. Time has not permitted a careful check but the following species may be noted:

Barleeia subtenuis Carpenter * Common on the eel grass Jan. 1940.
Cerithiopsis carpenteri Bartsch- From sponge on the bridge pilings.
Cerithiopsis cosmia Bartsch- In rubble to the left of entrance.
Cerithiopsis pedroana Bartsch- Very abundant on the small bits of yellow sponge adhering to the eel grass. Jan. 1940.
Odostomia donilla Dall and Bartsch- On the bridge pilings.
Odostomia fetella Dall and Bartsch- Common in the eel grass roots.
Turbonilla buttoni Dall and Bartsch- In the eel grass.
Turbonilla tenuiculus Gould- "
Turbonilla tridentata Carpenter- "

And we should not overlook one of the more recent descriptions from Mission Bay- Epitonium tincta bormanni Strong 1941. This species was first collected by our members, Mr. and Mrs. Ralph Borman, Oct. 1939 and was described by Mr. A.M. Strong in the Nautilus, Oct. 1941- Vol.55, pp48-51.

John M. Dowdle is now editor of the Westlake Post, 2304 W. Seventh St., Los Angeles, Calif. Jack's many friends will wish him the best of good luck in his new enterprise.

Number 6 of Johnsonia has been received. " The Genus Conus in the Western Atlantic" by William J. Clench. Dr. Clench may well be proud of this forty page paper. However, it will not be popular with those who dislike to change labels.

Your reporter has had occasion recently to check over his library for information on the fauna of the Solomon Islands. Two splendid papers whould be of interest to our members particularly because the material was in part collected by our own member Mr. W.J. Eyerdam. They are American Museum Novitates; Number 763, Dec. 31, 1934 by Ilse Rensch " Studies on Papuina and Dendrotrochus, Pulmonate Mollusks from the Solomon Islands" 26pp, and Number 1129, July 31, 1941 By William J. Clench " The Land Mollusca of the Solomon Islands (Succineidae, Bulimulidae and Partulidae".

California Fish and Game, Vol.29, No.1, Jan. 1943 has been received.

Glenn R. Webb, well known student of the land fauna of his state of Indiana, honored us by being our guest on a recent week end. He is now Pvt. Glenn R. Webb, 3556 3604, 813 S. Flower St., Room 902, Los Angeles, Calif. Harold Harry Ph/M 3/c U.S. Naval Hospital, Corona, Calif. was here at the same time and the boys made a short collecting trip into the nearby Palos Verdes hills. They returned with a fair catch of our native Helminthoglypta as well as some fresh water material. Later in the day Dr. W.O. Gregg of Los Angeles dropped in and we all engaged in a slug and snail hunt in the family lath house and garden much to the appreciation of Mrs. Burch who looks after our floricultural activities.

Homer V. Geib, Conchologist of Palm Beach, Florida is now Pvt. Homer V. Geib, Camp Corsair, Barracks #13, c/o Consolidated Aircraft Corporation, San Diego, Calif. We are happy to welcome him to our circle of shell collecting service men.

Dr. Maxwell Smith, Box 92, Lantana, Florida is preparing a 1943 edition of his Conchologists and Shell Collectors- Directory- price not to exceed $1.75. Those interested in being listed will notify Dr. Smith of their interests.

A Christmas Greeting card gives us Pvt. F.M. Bayer, 3 T.S.S., Bck.71, Lowry Field, Colorado. Ted has apparently been moving about.

Mrs. Rose B. Parks, 337v 11th St., Santa Monica announces the marriage of her daughter Alice. We trust that Alice, now Mrs. Herbert Truman Casey, will recruit Mr. Casey as another collector. Of course, we all wish them the best of everything.

Dr. John W. Nevius, 1930 Wilshire Blvd., Los Angeles- " Although I have not been able to attend the meetings, I am still very much interested in the Conchological Club, and would very much appreciate receiving the notes of the meetings".

Mr. and Mrs. H.R. Turver, 127 Broadwa y, Santa Cruz, Calif. asks for the club's opinion on the specimens of Murex or Muricopsis erinaciodes Val.

Mrs. W.H. Eshnaur, 932 Flower St., Bellflower, Calif. " I cannot be with the club at its first meeting of the year in person, but am with you all in spirit, and send greetings to all. May God bless and keep you all thru the whole year".

Morris E. Caruthers, 120 E. Chestnut St., Glendale, Calif. Our change of meeting time has been unfortunate indeed if it is going to make it impossible for Mr. Caruthers to attend. It is difficult to think of the Conchological Club without thinking of Mr. Caruthers whose attendance record must be without an equal. Mr. Caruthers and his sister leave for their ranch in San Diego County about the 10th of each month and return the first of the following month.

Mrs. Ida Worthy, Patumahoe, Auckland, New Zealand. Mrs. Worthy has written urging all of our members who might visit New Zealand in our armed forces to look her up and receive a welcome hand. Mrs. Worthy is a very enthusiastic collector and let us hope that some of our members will have an opportunity to accept her invitation.

MEMBERS OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Active Members

Austin, Mr. and Mrs. George W. - 1065 Mary Bell Ave.,Roscoe, Calif.
Baker, Mr. and Mrs. E.P.- 417 S. Downey Ave.,Downey, Calif.
Bagley, Mrs. Laura B.- 1119 Arapahoe St.,Los Angeles, Calif. Phone FI 8051
Barnett, Mr. and Mrs. Fred- 80 62nd Pl., Long Beach, Calif.
Bauman, Albert- 6136 Lexington Ave.,Los Angeles, Calif.
Betchel, Gillett- 619 Victoria Ave.,Venice, Calif.
Borman, Mr. and Mrs. Ralph, and Ralph Jr.- 4331 Vermont St.,Long Beach, Calif.
Brookshire, Jack- 948 Beverley, Bellflower, Calif.
Bunker, Colonel Paul D.- U.S. Army
Burch, Mr. and Mrs. John Q.- 1611 S. Elena Ave., Redondo Beach. Phone Redondo 6957
Burch, Mr. and Mrs. Thomas A.- 680 W. 34th St.,Los Angeles, Calif.
Cameron, Mr. and Mrs. Edward- 690 E. Palm St., Altadena, Calif.
Caruthers, Morris E.- 120 E. Chestnut St.,Glendale, Calif.
Chace, Mr. and Mrs. E.P.- 724 11th St., San Pedro, Calif.
Clark, Mrs. Effie M.- 403 S. Mariposa St., Los Angeles, Calif. Phone FE 3342
Cook, Miss Edna T.- 1002 N. Hobart Blvd.,Los Angeles, Calif.
Cornett, Mrs. Mary- 2229 Griffin Ave., Los Angeles, Calif.
Dinkins, Richard C.- 117 N. Las Palmas, Los Angeles, Calif.
Dippell, Mrs. Albert- 858 Tremoine Ave., Los Angeles, Calif. 10927
Edmonds, Mr. and Mrs. Elmer V. and Bob- 922 N. Kingsley Drive,Los Angeles-T.M.O.
Fowkes, Bill- N.H.S., Norwalk, Calif.
Gillis, Mr. and Mrs. A.W.- 70 El Nido Ave., Pasadena, Calif.
Gregg, Dr. Wendell O.- 2200 S. Harvard Blvd., Los Angeles,Calif. Phone RO 2589
Hargar, Glenn E.- 1336½ S. Menlo Ave.,Los Angeles, Calif.
Harry, Harold W. Ph.M.3/c- U.S. Naval Hospital, Corona,Calif.
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Limbaugh, Conrad C.- 707 S. Clark St.,Bellflower, Calif.
Linkogel, Jennie- 1963 Waltonia Dr.,Montrose, Calif.
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Ryan, Lloyd- 900 Leighton Ave., Los Angeles, Calif.
Schick, Mr. and Mrs. Morris- 715 S. Central Ave.,Glendale, Calif.
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Smith, Dr. A. Haven- Orange Union High School, Orange, Calif.
Smith, Don- 5930 Barton Ave., Los Angeles, Calif.
Sprague, Mr. and Mrs. Edgerton B.- 1920 Victoria Drive, Santa Ana, Calif.
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Thomas, Carl I.- 202 N. Pine St.,Orange, Calif.
Ulrich, Mr. and Mrs. E.N.- 117 W. Anaheim St., Wilmington, Calif.
Weisman, John- 1636 Vermont Ave., Los Angeles, Calif.
Wilkins, Mrs. Jean- 3939 Gundry, Long Beach, Calif.
Willett, Mr. and Mrs. George- Los Angeles Museum, Exposition Park, Los Angeles, Cal

Williams, Sgt. Woodbridge- 1st Mapping Corps., Colorado Springs, Colo.
Williams, Mrs. Venice- Padua Hills, Clarement, Calif.
Wright, Dr. Charles W.- 46 N. Lake Ave., Pasadena, Calif.

Associate Members

Aldrich, F.R.- Box 155, Bay Island, Balboa, Calif.
Althaus, Kenneth L.- 319 E. 110th St., Los Angeles, Calif.
Clark, John H.- 1246 S. Hope St.,Los Angeles, Calif.
Connelly, Mr. and Mrs. P.M.- 5851 Avalon Blvd., Los Angeles, Calif.
Cook, W.P.- 2966 Union Ave., San Diego, Calif.
Crittenden, La Verne, 175 N. Clark St., Bellflower, Calif.
Eshnaur, Mrs. W.H.- 932 Flower St.,Bellflower, Calif.
Eyerdam, W.J.- 7531 19th Ave., N.E., Seattle, Wash.
Florer, Jack- 709 Clark St.,Bellflower, Calif.
Ford, Frank Ray- 10239 Rosewood Ave.,Los Angeles, Calif.
French, Mr. and Mrs. M.E.- 792 W. 28th St.,San Pedro, Calif.
Galbraith, Will H.- 1132 Summit Ave.,Pasadena, Calif.
Gemmell, Mrs. Hattie- 1304 Magnolia Ave., San Jose, Calif.
Genter, Alice- 1225½ E. 68th St.,Los Angeles, Calif.
Grant, Dr. Adele- 6019 S. Overhill Dr.,Los Angeles, Calif.
Grant, Dr. U.S. IV, Dept. of Geology, U.C.L.A., Westwood, Calif.
Hertlein, Dr. Leo G.- California Academy of Sciences, Golden Gate Park, San Francisco
Hollenbeck, John- 535 Ardmore, Bellflower, Calif.
Huffman, Earl C.- 356 Stanton St.,Pasadena, Calif. Phone Sterling 7798
Hunter, Eula- 3814½ S. Hope St., Los Angeles, Calif.
Landreth, Lou- 2419 Ocean Front, Venice, Calif.
Keen, Dr. Myra, Box 1563, Stanford University, Calif.
Lane, Mr. and Mrs. J.M.- 147 Roosevelt Ave., Pasadena, Calif.
Lermond, N.R.- Thomaston, Maine
McGowan, H. Carroll, 1230 Crescent Dr., Glendale, Calif.
Nevius, Dr. John W.- 1930 Wilshire Blvd., Los Angeles, Calif.
Parker, Sgt. J.D.- Btry.C, 265th CA, Fort Taylor,Key West, Florida
Pattison, Mrs. Mildred- 311 N. Gertrude Ave., Redondo Beach, Calif.
Peterson, John- 2155 Rimpau Blvd., Los Angeles, Calif.
Sorensen, A.- 247 Granite St., Pacific Grove, Calif.
Smith, Allyn G.- 722 Santa Barbara Road, Berkeley, Calif.
Spicer, Mr. and Mrs. V.D.P.- RFD 2, Box 237, Centralia, Washington.
Walker, Miss Maude- 427 S. Olive St.,Los Angeles, Calif.
Waterbury, Miss Alice- 2235 Norwalk Ave., Los Angeles, Calif.
Wilcox, Ernest N.- 1738 Johnson Ave., San Luis Obispo, Calif.

Honorary Member

Pilsbry, Dr. Henry A.- Philadelphia Academy of Natural Sciences,Philadelphia, Pa.

Deceased

Oldroyd, Mrs. Ida M.
Gay, Miss Clementine
Aldrich, Mrs. F.R.
Rutherford, Mrs. De Rose
Brown, Walter L.

LONG BEACH SHELL CLUB

The next meeting of the Long Beach Shell Club will be held at the home of Mr. and Mrs. E.P. Chace, 724 W. 11th St., San Pedro, Calif. on Feb.7,1943 at 2 P.M.

Mr. E.P. Chace will be the speaker on the subject " Pholads and Allied Groups".

Minutes of the January, 1943 Meeting

The January meeting of the Long Beach Shell Club was held at the " Shell House" studio and home of the John Burches, Redondo Beach, on sunday afternoon, Jan.3rd, at 2:30 P.M. There were 19 members and 3 visitors present, our host and hostess included. Glad to have with us again one of our newest members, Mr. Harry of the U.S. Naval Hospital, Corona, Calif. Also Miss Julia Ellen Rogers, our sponsor. The minutes of the previous meeting were read and approved with corrections. The new president, Ralph Borman, of Long Beach, presided and appointed John Burch and Dr. Howard Hill on the Nomenclature Committee.

On motion it was voted to accept the offer of John Burch to include our minutes and notice of meetings in the publication of the Minutes of the Conchological Club of Southern California, inasmuch as many of the Long Beach members are also members of the S.C. Conchological Club also. The motion was carried with thanks to Mr. Burch.

Invitations for the next meeting were called for. Various items had to be considered. Several members of our club are teachers and mid term exams are evident. Gas saving to be considered. Getting in and out of our port towns under existing conditions etc. After much discussion the following schedule was announced. The Feb. meeting would be held at the home of Mr. and Mrs. E.P. Chace of San Pedro. The March meeting to be held at Wilmington at the home of Mr. and Mrs. E.W. Ulrich, Mr. Ulrich to speak on the subject of " Cowries". The program for the rest of the year will be seen below. The librarian issued a call thru the Sect. for Vol.55, No.2 of the Nautilus 1941. Some one had borrowed it and not returned it.

Collecting notes were made when John and Rose Burch reported taking some Abalones and finding Triphora pedroana Bartsch, Odostomia donilla Dall a d Bartsch, Odostomia phanea Dall and Bartsch, as well as other small species in the moss growing on the shells.

The business concluded with Dr. Hill, our new program chairman, introducing our host of the day, Mr. John Burch as speaker on the subject of " Deep Water Natica". Too much ' ship building' had kept John from preparing his subject as he wished to and so he chose his own at random taking from his shell cases, not only the Naticas and their relatives but many of the Brachiopods, and as questions were asked, other shells were shown and described. The applause showed only too well the appreciation of his discourse, and as the folk crowded round the open drawers of shells, the president ordered the meeting adjourned.

The ladies present aided the hostess, Mrs. Burch in the serving of refreshments, which some found hard to handle with their hands full of shells at the same time. Presents of shells were made to members and friends from boxes of duplicates and most all the folks went home loaded.

Thanks for a swell time, Mr. and Mrs. Burch.

E.P. Baker- Secretary-

Program of the Long Beach Shell Club for the Year 1943

Meetings at 2:30 P.M. on the First Sunday of each month.

March 7. At home of Mr. and Mrs. E.W. Ulrich, 1049 Island Ave., Apt.C.,Wilmington, Calif. Speaker Mr. Ulrich " Cowries".

April 4- At the home of Mr. and Mrs. Ralph Borman, 4331 Vermont St.,Long Beach. Speaker Mr. Ralph Borman- " Mytilidae".

May 2.- At the home of Miss Julia Ellen Rogers, 355 Junipero St., Long Beach. Speaker Mrs. E.P. Chace- " Chitons".

June 6.- At the home of Dr. and Mrs. Howard R. Hill,4262 Angeles Vista Blvd., Los Angeles, Calif. Speaker Dr. Howard R. Hill- " Tritons".

July 4.- At the home of Mr. and Mrs. E.P. Baker, 417 S. Downey Ave.,Downey, Calif. Speaker Mr. E.P. Baker " Small Bivalves".

Aug. 1.- At the home of Mr. and Mrs. Fred Barnett, 80 62nd Place, Long Beach, Calif. Speaker Mrs. Fred Barnett " Terebras".

Sept.5.- At the home of Mrs. Grace Ferriss, 5304 Appian Way, Long Beach, Calif. Speaker to be announced.

Oct.3.- At the home of Miss Julia Ellen Rogers, 355 Junipero Ave., Long Beach. Hostess-Mrs. Leona Lindermann. Speaker to be announced.

Nov.7.- At the home of Mr. and Mrs. John Q. Burch, 1611 S. Elena Ave., Redondo Beach. Speaker- Mr. John Burch " Tritonalias".

Dec.5.- At the home of Mr. and Mrs. Claude Lehmann, 248 Ximeno Ave., Long Beach, Calif. Speaker- Mrs. Inez Lehmann " Olividae".

Members of the Long Beach Shell Club

Baker, Mr. and Mrs. E.P., 417 S. Downey Ave., Downey, Calif.
Banner, Dorothy- 550 Pacific, Long Beach, Calif.
Barnett, Mr. and Mrs. Fred- 80 62nd Place, Long Beach
Beiggren, Miss R. Minnie- 201½ W. 6th St., Long Beach, Calif.
Borman, Mr. and Mrs. Ralph, Ralph Jr.- 4331 Vermont St., Long Beach, Calif.
Bruck, Mr. and Mrs. Earle, Jean- Box 2, 682 Atlas Road, Napa, Calif.
Bucklin, Mrs. G.B.- 1140 E. 1st St., Long Beach, Calif.
Burch, Mr. and Mrs. John Q.- 1611 S. Elena Ave., Redondo Beach, Calif.
Burch, Mr. and Mrs. Thomas A.- 680 W. 34th St., Los Angeles, Calif.
Chace, Mr. and Mrs. E.P.- 724 W. 11th St., San Pedro, Calif.
Davis, Miss Evelyn- 1152 E. 1st St., Long Beach, Calif.
Ferris, Mrs. Grace Paxon- 5304 Appian Way, Long Beach, Calif.
French, Mr. and Mrs. M.E.- 792 W. 26th St., San Pedro, Calif.
Friis, Mrs. A.- 2341 E. 2nd St., Long Beach, Calif.
Higgins, Miss Lena- 344 W. 9th St., Long Beach, Calif.
Hill, Dr. and Mrs. Howard R. - Los Angeles Museum, Exposition Park, Los Angeles
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Kingsbury, Mrs. Guy W.- 2885 Chestnut Ave., Long Beach, Calif.
Lehmann, Mr. and Mrs. Claude - 248 Ximeno, Long Beach, Calif.
Libby, Mrs. Ruth- 817 Carson, Long Beach, Calif.
Lindermann, Mrs. Leona- 80 62nd Pl., Long Beach, Calif.
Mazur, Mrs. Elsie A.- 1948½ Lime Ave., Long Beach, Calif.
McBride, Mr. and Mrs. J.A.- 1443 Lime Ave., Long Beach, Calif.
McCord, Mrs. Clara and Harry- 250 Ximeno, Long Beach, Calif.
McGill, Mrs. H.R.- 183 Roycroft, Long Beach, Calif.
Oehlman, Mrs. R.F.- 1704 E. 11th St., Long Beach, Calif.
Paxon, Mrs. Alice- 5304 Appian Way, Long Beach, Calif.
Rogers, Miss Julia Ellen- 355 Junipero, Long Beach, Calif.
Seaver, Mrs. - 6038 Walnut St., Long Beach, Calif.
Sherrod, Mr. S.T.- 1268 Loma, Long Beach, Calif.
Skinner, S.G.- 630 Almond, Long Beach, Calif.
Smith, A. Haven- Orange Union High School, Orange, Calif.
Sossen, Mrs. M.B.- 183 Roycroft, Long Beach, Calif.
Stephenson, James M.- 207 Quincy, Long Beach, Calif.
Symonds, Allie- 261 E. Seaside, Long Beach, Calif.
Thompson, Mrs. Joe Della- 4351 Long Beach Blvd., Long Beach, Calif.
Tripp, Miss Anna J.- 82 Giralda Wk., Long Beach, Calif.
Ulrich, Mr. and Mrs. E.W.- 1049 Island Ave., Wilmington, Calif.
White, Miss Helen E.- 335 E. 9th St., Long Beach, Calif.
Wilkins, Mrs. Jean- 5939 Gundry, Long Beach, Calif.

COLLECTING LAND SNAILS IN SAN LUIS OBISPO COUNTY, CALIFORNIA

by Ernest N. Wilcox

California's San Luis Obispo County is larger than the states of Delaware and Rhose Island combined. It has mountains, valleys, plains, and near deserts, and the Pacific Ocean washes it's entire western side. This report is an effort to scratch the surface in only a few places, for there is much of the eastern and southern part of the county that I have not visited, and where probably other land sna occur. If any club member has collected in the county, other species than those list a report would be appreciated.

My first California land snails were collected in February of 1934, when I went with a group of Garden Farms young people to the Canyon of the Salinas river about 3 miles northeast of Santa Margarita. The canyon is a granite walled gorge about 1½ miles long and through this channel the head waters of the river reach the Salinas Valley proper. There are no roads through the canyon, and it must be explored on foot. Along the sandy shores of the river, under old logs, I found a large land snail that Mrs. Emery P. Chace identified as Helminthoglypta umbilicata (Pilsbry). In later years I found this species to be common over the region from Santa Margarita to Atascadero. An especially good collecting field was a large swamp east of the Santa Margarita Union Oil Company pump station. In wet weather a good place to collect was under old logs, and in the dry season I have found fine specimens under the damp sticks at the bottom of pack rat's nests. Mrs. Effie M. Clark, John Q. and Tom Burch, and Emery P. Chace have all collected this species at this swamp locality.

Of the several forms of umbilicata , the one called cuestana seems now most difficult to collect. In early May of 1942 I spent one whole day along the mountain crest from the top of Cuesta pass to westward for a mile and found only one live specimen. Morris E. Caruthers has collected this form lower down on Cuesta Pass, but whether from the north or the south side I do not know. Six years ago when on a climb among the high eastern hills of the Von Schroeder ranch(three miles north of Cuesta Pass) I found this form, but the whole area has since been burned over, and the snails destroyed.

On May 1st of 1942 I was invited by one of the State Fish and Game Wardens to accompany him on a trip to the northern coast section of the county. It was the opening of the trout season , and the wardens were patrolling the mountain streams of that district. Their headquarters were at an unoccupied ranch house on San Carpojo Creek, 1½ miles east of the Roosevelt highway. Here for two days I was able to make collections in what was probably new territory. San Carpojo Creek is a mountain stream except for the last two miles, and it's banks are a tangle of nettles, poison sumac, and wild blackberry vines. The evening of our arrival I went into this angle and emerged with many scratches and two live umbilicatas. Next morning I crossed the creek and headed for a ravine high up on the mountain side, but after climbing for hours found a springy spot where five umbilicatas were feeding on fern shoots. A toilsome return through recently burned chaparral brought me back to headquarters in mid afternoon, soot covered and tired. After a rest I wandered out into the barnyard, and on a chance turned over two old bridge planks. The results astonished me, for underneath were more Helminthoglyptas than I had ever seen in one place before. After leaving most of the younger ones, I had more than 40 finely colored live umbilicatas. The next morning I donned my rubber boots and waded up the creek for a quarter of a mile. Here the narrow creek flat widened out and there was a grove of cottonwoods. During high water much trash had washed down and lodged against their trunks, and as I dug over this material I found fine live specimens of Polygyra pinicola Berry and Haplotrema minima (Ancey). By mid afternoon I had collected 25 Haplotremas and 46 Polygyras. On my return to headquarters the wardens were much interested in my Polygyras, for these " hairy" snails they had not seen before.

In February of 1934 I was collecting marine shells at the southern end of Morro Bay and on the high sand dunes of the peninsula at this point I found fine specimens of a plump land snail. At this time all land snails were Helminthoglypt umbilicata to me, and later on as I was sending a collection of shells to the Muse of Natural History at San Diego I so labelled specimens of this snail. Mrs. Kate L. Stephens was closing her work at the museum, but though greatly hurried, sent me a short report in which she pointed out that this snail was Helminthoglypta walkeriana (Hemphill). My only shell literature at this time was Keep's " West Coast Shells" which I borrowed from the county library, and as I could find in it no mention of Helminthoglypta walkeriana , even as a synonym, I was left rather bewildered. Later I included specimens of this snail in a collection sent to Allyn G. Smith of Berkeley. Mr. Smith wrote at once saying that this was Helminthoglypta walkeriana (Hemphill), a rare land snail, and that he would like live specimens, and a map of the collecting locality. These I was able to send, and Mr. Smith as well as Morris E. Caruthers have collected specimens there, also Mr. and Mrs. Emery P. Chace, Mr. and Mrs. John Q. Burch, and Dr. and Mrs. E.V. Edmonds have all made collections at that locality. Late in the fall of 1941, Glenn R. Webb, a young conchologist of Indianapolis, wrote and asked for live specimens of walkeriana, but though I searched the above locality for two hours I was only able to find five young live specimens, four of which I sent him. It would seem that in this location, walkeriana is nearing extinction, as has already occured in the Baywood Park area, where dead shells indicate that it was once abundant. Fortunately walkeriana occurs sparingly among the sand dunes on the ocean side of the Pacheco ranchfor several miles south of Morro Bay, perhaps as far as Spooner Beach. Since the Pacheco ranch is now closed to visitors, it may be that H. walkeriana will now be given a new lease of life. It is a snail that has many enemies; mice and pocket gophers destroy quantities. The great black centipedes hunt them out , and the larvae of the blow fly devour them alive.

In August of 1940 I came to live in San Luis Obispo and in my walks along a ditch near my home I found dead shells of a land snail that puzzled me. When the rainy season came on I found a few live ones and sent them to Dr. Henry A. Pilsbry of the Philadelphia Academy of Sciences. Dr. Pilsbry wrote that this was the small form of H. walkeriana that Hemphill called var. morrowensis, but that he doubted its being distinct from walkeriana. It is of rather rare occurance along the high bank of a ditch between Fairview Ave. and the S.P. railroad in San Luis Obispo.

In early December of 1941 I went with my son-in-law duck hunting to Oso Flaco Lake in the southwestern corner of the county. The lake is about a mile long and so close to the ocean that the sand dunes drift in to its lower end. On the north side of the lake is a high sandy brush covered hill, and here I found a dozen specimens of a large land snail. Some of these I sent to Allyn G. Smith who reported them to be large specimens of the snail that occurs farther south at Surf in Santa Barbara county, and has been named Helminthoglypta traskii fieldi Pilsbry.

In late November of 1942 I was invited to go with friends on a quail hunting trip to the Black Mountain region in the central part of the county. It was extremely dry , but along the sandy gullies I found 6 dead shells and 2 live specimens of a land snail that seemed to be Helminthoglypta traskii Newcomb. These were all under old logs.

Of all the California land snails I have collected , I think my favorite is the little Amber snail, Succinea oregonensis Lea. Found along the muddy margins of Graves Creek, Yerba Buena Creek, Santa Margarita Creek, and in wet seasons along roadside ditches in the Atascadero Garden Farms district it is nowhere abundant, but in an afternoon's collecting one has usually picked up 4 or 5. Its short plump body, small horns, and deep amber sugar-scoop like shell distinguish it from water snails. I have collected specimens along San Luis Obispo Creek, but it seems less common there than on the eastern side of the Santa Lucia mountains. I have found, on the muddy ground around a small concrete reservoir just east of the Spring Street here in San Luis Obispo, a small Succinea that resembles Succinea avara Say, that Morris E. Caruthers reports from Morro Bay.

The European snail, Helix aspersa Muller, has become a pest in all the coast towns of the county, but I have not found it in the interior districts. There are several interesting color variations.

I thought that when Polygyra pinicola and Haplotrema minima were found in northern San Luis Obispo county, it was some kind of a record, but in the January club minutes Morris E. Caruthers reports Haplotrema minima at Morro Bay. (Sometime I've got to lick that man.)

I had intended to include land slugs and fresh water snails in this report but already it grows too long, and I must leave them for another time.

Land Snails of San Luis Obispo County, California

Helminthoglypta umbilicata Pilsbry
" " cuestana Edson
" " caycosensis Pilsbry
" walkeriana Hemphill
" " morroensis Hemphill
" traskii Newcomb
" " fieldi Pilsbry
Helix aspersa Muller
Polygyra pinicola Berry
Haplotrema minimum Ancey
Succinea oregonensis Lea
Succinea avara Say

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Colonel Paul D. Bunker, one of the active members of the Conchological Club of Southern California has finally been heard from. Colonel Bunker was in command of heavy artillery on " The Rock" and helped in the heroic defense of Corrigidor. He is now reported a prisoner of the Japanese. Colonel Bunker had been stationed in the Philippine Islands twice before his assignment there for the futile defense last year.

Most of the members of the club have fine specimens from the Philippines in their cabinets bearing one of the Colonel's neatly typed labels.

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Mr. and Mrs. A.W. Gillis, 70 El Nido Ave., Pasadena, Calif. " Greetings to you. We miss not seeing you folks but Mr. Gillis is in defense work on the swing shift here in Pasadena. So, as the climate seems better for us we will stay here. The only conchological activities we have these days deal with shelling out the cash and the wish we had collected more coffee beans".

W.J. Bower, 334 Third St., So., St. Petersburg,Florida. Mr. Bower, whose home is Bronxville, N.Y. is wintering in Florida. " The military restrictions have not hampered us here much yet. No going to the shore after dark prevents me trying nocturnal collecting as I had hoped to try. Then there is an island off shore in the Gulf, which has to be reached by boat, and I am told that one has to be investigated,furnish birth certificate and get a permit, before being allowed out in the boat. So I suppose Shell Id. is out for the duration. Our shell club here started the season with a goodly number of more or less interested collectors, and meetings continue every two weeks." However, Mr. Bower reports having collected a very imposing list of species including two new species. For most of us this would be good work for a life time of collecting. Among other interesting notes Mr. Bower mentions " The Bittium varium Pfeiffer are here by the million, living on the sea-lettuce in Tampa Bay."

Mr. Paul P. McGinty, Boynton Beach, Florida wrote us a newsy letter. Dr. Pilsbry arrived at Lantana,(5 miles from Boynton) to spend a month with his two daughters. Tom McGinty has for the past six months been working for the U.S. Engineers in war work as Building Inspector on airplane projects as Boca Raton, Fla. which is some 15 miles south of Boynton Beach. He is now doing similar work at Venice, Fla. Paul L. McGinty has for the past 6 months been connected with the Broadcasting Station "W.W.P.G., He is a radio engineer. The last line of the McGinty letter has a familiar ring though " For the last six months we have not had time to do anything with our shells. Hope this war will be over soon so we can get back at our shells."

The following article is composed of excerpts from the letters of Don Edmonds to his parents, Mr. and Mrs. E.V.Edmonds,922 N. Kingsley Dr., Los Angeles. Don was an active member of our club before his departure, and your reporter can state that his able seamanship was greatly missed on subsequent dredging excursions. But Don is now married and a resident of Honolulu.

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On February 28, 1940, our son Don left here to go to Honolulu, to take a job with the Honolulu Construction Company. He worked at Pearl Harbor for a few days until the navy supply boats could take him over to Johnston Island, which is 741 miles southwest of Honolulu. All supplies and men were transported by the navy and the only contact with the outside world was through these ships and - in an emergen--cy- a navy plane. If a letter came through with the Pearl Harbor postmark we knew it had gone to Pearl Harbor by plane; if it was sent by ship it bore the postmark of that ship. So we have letters postmarked " Astoria","Childs","Quail" and "Sirius". We were much interested when we read the article in the Saturday Evening Post "Eighteen Men and a Boat" in December, to note that the " Quail" was their ship which they scuttledin the Harbor of Manila and we could not help but wonder if Don was acquainted with any of them. Don left Pearl Harbor on March 9 and landed at Johnston on the 19th. The reason for that length of time to go 741 miles was that carrying sypplies to islands was only one of their tasks. In the meantime they were acting as standby base for some of the flying boats. Don thoroughly enjoyed the experience as he was a good sailor.

" Johnston Island" is a coral reef some thirty by five miles. Not one continuous reef but a succession of broken reefs and coral headsone inside of another filling the whole space except for a small lagoon. There are two small islands in this lagoon- the one on which the camp was located being three fourths of a mile in circumference. The larger one is 4½ miles around.

The first day he was there he wrote in orderto have the letter go back on the Astoria before she left the island. He said " There are thousands of birds around and literally millions of sea shells. I have found 8 different shells and four kinds of coral so far in my one wandering around the island the camp is on. It is apparently a shell collectors paradise". But he soon found that was rather too optimistic a statement. The problem was the same as in Newport Harbor-m the dredgin had stirred the water so much that the live shells had left, outside of the littoral shells. But we had told him when he left to get live shells if there were any; but if not to get dead ones to show what had grown there.He says " Above the sea level there is little or no scenery but below-plenty of coral formations and shells fish and marine life. I have found to date 8 or 9 different shells alive and 7 or more dead varieties. I am told there are several kinds here not found near Hawaii or the mainland.An underwater color camera would be a wonderful thingto have here beacuse of the beautiful coral formations and fish- all colors and markings. There is no end of things to do here- fish, collect shells, swim,movies, and Hawaiian language lessons". On the tug going over he became acquainted with a Hawaiian who taught him the Hawiian language,much information about fishing and other sports. He says " Tonight the Hawaiians are giving a luau (feast) with all the trimmings- raw fish,salt dried fish, raw crabs, rice,onions, and poi. I have been invited to the luau (rather unusual for a foreigner) because I have been friendly toward some of the Kanakas. The fellow Waiwaiole I spoke of helped me " crash" the tight clique the Kanakas have. I am learning to spear the fish,clean,salt,dry, and consum them without any ill effects. But I am still hunting for that tribe they put on postcard pictures and handbills". We do a lot of trolling here and hook marlin, albacore,ulna and shark- each weighing up to 50 and 70 lbs. The surf is about 18 reefs out (a line of reef about every 150 ft.) and pounds so hard it isn't advisable to go too near. A boat would break up and to swim out would be silly- the coral would cut a person up in that surf. There is about 4 ft. extreme variation of tide and 2 ft. ordinarily so we dont pay much attention to tides- only when we fish and have to worry whether the propeller will clear the coral crowns. Also the the currents we have to watch some so we wont lose the bottom of our skiff. Collecting is done either from a boat if we want to go very far out to the deep-35 to 50 ft.,or only walk around from one line of coral to another if close in (2 to 7 ft.

Shells are hard to find because of the fine sand that drifts around, or the darn shells hide in the coral crowns and can't be seen. The coral that is pretty enough to collect is too fragile to ship and the fish wont pass the customs so you'll have to be content with the drawings I guess."" Sunday, the 14th I was free, so I went out with Waiwaiole, Sol the mechanic, and Oscar the cat-skinner. We took the skiff with an outboard motor, left about 7 :30 A.M. We hit a coral head almost as soon as we left the dock because we did'nt follow the channell, broke the propeller pin, dropped the anchor and replaced the pin. We resumed our winding course and stopped at the tops of several coral crowns. About 2 ft. of water over each crown. A crown is usually about 25 ft. in diameter and reasonably round or oblong in shape. I wear sneakers and so far have gotten along pretty well. We were looking for oyster shells. They are about 8 inches in diameter and round and flat. At about the 5th crown we stopped, Oscar had the glass box and was looking down for the shells. He was swimming around the crown about 6 ft. from the outside edge- drops off to 25 ft. average. He said " Look at the big ulna, has big fins". Waiwaiole said " Where-oh I see (pause) Mano/ Hey Oscar, Shark/ Oscar soon was in the boat and Sol wanted to go home. The shark was about 7 to 8 ft. long, black and of the dangerous variety. We moved to another coral a safe distance and soon had 4 oyster shells, 3 coral trees, a dozen coral with hole, a fountain coral, a pan coral- and some sunburn. Everybody complained of leaking goggles and a headache from water pressure so we came in about 11:30 A.M. The next afternoon I made a glass box of my own and about 4:30 we decided to go trolling. We caught an ulna (23 lbs.), 2 nunu (fish about 3 ft. long and 1½ inch circumference) and a green fish I havent seen before- about 2 lbs. I was the navigator (I spotted the coral crowns and told Waiwaiole) and the 1st cook and a mess boy tended the troll lines. Next day I took my spear and goggle and caught 2 manini and a rainboy zebra fish (pretty)." Another time " Went fishing with the radio man- caught 3 li (25-30 lb.), a small ono (18 lbs.) and 2 ulna 35 & 20 lbs." " We eat the fish we catch-mostly fry or bake them for a special fish dinner (chef's special). The crew and staff all share in the fish and occasionally bring in some to donate. We use company boats and motors whenever they are not being used for work. The shell collecting near the island is about shot now because the blasting seems to have broken the coral animals loose; they float around and settle on everything. The water is very cloudy and visibility is almost nil. The only shells I have found in the last two weeks are all dead specimens, most of them broken by blasting and dredging." Another sunday he was out. " Three Kanakas in a small boat were running alongside of us. They were a little ahead and to stop, they swung their outboard motor around to reverse position. The darn thing suddenly jumped out of the boat off the stern and dove into the water tank first. They had to dive into 12 ft. of water to put a line on it and worked about 4 hrs. taking it apart to get the water out of the inside of the motor. Some fun. The average temperature is about 75 or 80 degrees most of the time. Water is nearly always 73 or 75 degrees. Waiwaiole found a beautiful dead specimen of a Japanese shell in the sand the other day when they were digging a pipe line. I tried for the better part of the afternoon to talk him out of it for the benefit of science butn no soap. It had lost all its color so I dont know what color it was originally. It was about 1½ in. long, 3/4 in across the lip, and had a large outer lip at the lower end of the spiral. There are 7 of those outer lips indicating that it would be about 7 yrs. old. The shell was butied deep enough to indicate that it had not been carried here by any human, but was born here on the billowy waves." He spoke of making himself a boat - which from the description I should judge was more like a glorified paddle board. It was 6½ ft. long, 15 in. wide, and to have metal air tanks built in for additional bouyancy/ " You have asked what precautions I use when swimming out to the dredgewell, I eat so much fish and poi that the sharks think I am a large fish and dont bother me at all. Seriously tho, I am very careful of sharks, eels and octopi. I always carry a knife and stay in reasonable distance of the reef tops. A fellow brought in a 9 ft. gray shark the other day they had caught on a large hook. I saw 2 mano and 2 rays. No foolin I kept my feet a d arms out of the water until I was sure they had gone away. They seemed to be only playing around and did not notice me. I had my knife out tho just in case I had to put Waiwaiole's teachings into practice about the vulnerable spots on a shark, should he be in the mood for a change of diet. The fins of the mano showed several times and once were about 6 or 7 ft. from me. The fin on one was 8 inches tall and on the other about 5 in. I I looked at them through my goggles and they were 9 and 7 ft. respectively. I found a large cowrie shell in about 18 ft. of water, living, but battered so much that it is not a very good specimen. Have you tried any underwater sight seeing yet ? Get a pair of underwater goggles, then try to learn how to hold your breath long enough to go down, take a look, pick a shell or two, make sure you dont bump the boat as you come up, and then rise gently to the surface with your catch. After you get the trick down pat you should be able to stay down 3½ or 4 minutes. As a starter dont go fooling around in water that is more than 10 ft. because of the high pressure encountered at 4 or 5 ft. and increasingly terrifically as you go down. My greatest depth so far is 27 ft. and seemed to be more like 270 fathoms. I thought I had stayed down for about 3 minutes that time and had to use a couple of old Hawaiian tricks to keep from busting before I shot to the surface. Waiwaiole said I had been gone 4 min. 20 secs, and was ready to go after me when I came up. The tricks involve the taking of a little seawater in through your lips and swallowing it at certain intervals, and how to move with as little exertion as possible.

From Midway Island

Midway Island is much the same formation as Johnston, but with three islands - Midway, Eastern and Sand Islands- with shallow lagoon and abrupt dropping off outside the reef. The fishes here are very similar and the underwater scenery is about the same. From all historical accounts the three islands were at one time one with about 200 inhabitants, and all sorts of tropical life with trees. In the early 1700 a 65 ft. tidal wave and hurricane destroyed the whole island and its population. In 1784 Captain Cook arrived and claimed the island for England, who owned it until 1902 when the U.S. took it over and established a cable relay station. The trees now on the island were planted by the cable company. Don says " There are only two k kinds of birds here not included in the migratory group- the tropical canary(looks like a cross between an English sparrow and a canary) and a small and almost wingless bird known as the Rail. They run around eating flies and cant fly. The other (migratory) birds are numerous but I havent been here long enough to see all kinds. There is the " Moaning Bird" (dark gray and white- a species of Tern), a " Love Tern" (pure white), Teal (brown and gray spotted), and the Gooney bird. The Gooneys are about the same size as a turkey but with shorter legs and large web feet. The neck and head resemble a Canadian Goose with a long hooked beak 6½ to 7 in. long. The eye is marked with white. They have such an unusual walk- every time they take a step they duck their heads. The Gooneys do a strange dance. They, like all sea birds , are clumbsy on land and are fun to watch. I saw one come in for a landing. He swooped down, lowered his feet and tail for a three-point landing and touched the sand. He hit, bounded, and rolled over about 4 times. Then he stood up, shook off the sand and waddled or tottered over to the rest of the flock with an unconcerned air. When they land they put their feet down and slide- they don't run along with their momentum- two or three inches to a stop. But the best one yet- a beautiful gooney came swooping down, stuck out his feet for a landing, missed his footing and slid a full 7 ft. on his tummy and face. We measured his slide track with a tape so it is not exagerated. Another one walked right into a hole and fell down. He looked right at it so he must have seen it. They seem to me to have all the other birds dumbness combined. I saw one the other day sitting on the side of a sand dune . She stood up and an she was sitting on rolled down the slope. About 5 ft. away was an empty beer can lying on its side. She missed seeing the egg and waddled over and sat on the beer can. The electricians were replacing some wiring and had placed several light bulbs on the sand. They finished wiring and turned around to pick up the bulbs but they were not to be seen. Investigation showed that several gooney birds had come along and rolled the bulbs into the brush and sat on them.

Christmas day I went out with two amateur ornithologists and leg-banded 250 gooneys. They are quite tame and can be picked up(dont forget the heavy gloves), They have a large sharp beak and can bite seriously if not handled with care. Both the black and white (two different families but similar in size) are sitting on eggs now. According to the ornithologist it requires 7 weeks of constant sitting to hatch a fuzzy goonie. The males are larger, having a six ft. 6 in. wing spread to the females 5 ft.

They are very comical to observe and show little or no concern till you approach within 6 or 8 ft. of them. Even then they only edge away slightly, and if you are to windward of them they cant move very fast. When they take off they head into the wind and look like an airplane taking a long run to get up speed. Once in the air they resemble an albatross. They have a wide wing spread and soar for half an hour at a time with no noticeable movement of their wings.

In March he wrote that he had a-day off and walked through the Cable Co. grounds to the beach. He said " On the way over I noticed that the young gooneys are getting large. It is almost impossible to distinguish between the young of the black gooney and the white one. They (the young) are like puff balls of gray and white feathers and are as much behaved as our small ones. One old black gooney was apparently the nurse maid to three young ones,- she went from one to the other. One of the youngsters was always hungry, another wouldn't stay put and had to be constantly scolded, and the third was quiet and stayed where he belonged. The young are fed by the parents disgourged pre-digested food, and are so fed until they are large enough to get out and fend for themselves. I saw one young one fed by both a white and a black gooney. Seemed kinda funny, because the two kinds don't very often mix. Perhaps the young of both species look so much alike that the parents couldn't decide to whom he belonged."

He said " I went around to the farther point of the island and found several good shells, but as I said before, the sand is constantly shifting and it is almost impossible to find them." The sand is almost white and is extremely hard on the eyes in spite of dark glasses, it is so bright that it reflects a great deal of light and even on cloudy days is hard on the eyes. Without colored glasses a fellow has a hard time of it. I finally solved the problem by getting a pair of welders goggles. It is so fine that it wont pack even when it is wet. Because of its structure the coral sand does not retain heat even on the hotest days. No land shells have been recorded here so far as I can find out. Apparently the hurricane of 1700 was so severe that no life above water survived. The shells I got to-day were all dead specimens but were in fairly good condition. The live specimens are so scarse that I think most of them have either been killed in the blasting or else moved away.

Midway Island (the main island) is larger than Johnston- takes about 2½ hours to walk around it.

I had beeh told that someone had warned that many shells sent from Midway in reality had come from other islands, so asked him about it. He said " All of the shells sent from Midway were collected by myself. I dont know which one of the Cypraea it is but if it is a sea shell I probably found it near the back-wash from the breakwater at Midway. Found lots of small ones there.

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The November,1942 Minutes # 17 carried a list of species dredged off Redondo Beach, Calif. by Tom and John Q. Burch. Mr. George Willett of the Los Angeles Museum has given certain of the species further study with the following observations.

" Your Epitonium spongiosum Carp. are surely the same as all my southern Calif. specimens that I have been calling E. retiporosum. Perhaps the later is a synonym of the former, which comes first on the page. If they are the same, I have no idea what retiporosum is. I am inclined to believe the two are identical and have changed my labels to E. spongiosum. "

Mr. Willett is also of the opinion that the species listed as Cadulus stearnsii Pils. & Sharp is identical with C. hepburni Dall, the Redondo Beach specimens being too slender for C. steransii particularly in the diameter of the aperature.

The identification of Acteocina planata Carp. was in error.

And in regard to the species listed as Volvulella cooperi Dall. Mr. Willett is of the opinion that this is perhaps an undescribed species and not V. cooperi for the following reasons- too small, the body has enamel in the aperature, and there appears to be no umbilical chink.

File

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 21
March 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or stamps.

All members are urged to attend our next meeting, March 28, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell books, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, California.

The program of the meeting of March 28 will include a report from Dr. W.O. Gregg on " Pacific Coast Slugs", and a report from Mrs. Effie M. Clark on " Fossils of Hilltop Quarry",

*** An interesting note from Mr. George Willett of the Los Angeles Museum. ***

A study of a series of topotypes of Macoma planiuscula Grant and Gale , recently received at the Los Angeles Museum, from Nunivak Island, Alaska, shows that specimens labelled planiuscula in some west coast collections are not of that species, but are probably referable to M. quadrana Dall. Typical planiuscula is more triangular in shape than the shell here called quadrana, the posterior end is more acutely angulated, and in unworn specimens, the entire surface is highly polished, as though varnished. I have seen such specimens only from the type locality, and I think it possible that most records of planiuscula from southern Alaska and southward, as well as from California fossil deposits, are really referable to M. quadrana.

I have not seen Monterosato's original description of the Tellinid Section Oudardia, but Dall gives the internal rib as its distinguishing character. It is, therefore, difficult to understand why the latter and following authors list Tellina modesta (Cpr.) under the section Angulus. Carpenter's original description of modesta calls for an internal rib and this feature is later quoted by Dall as a character of the species. In fact, the presence of this internal rib is about the only satisfactory means known to me of distinguishing Tellina modesta from the white form of Tellina carpenteri. "-- G. Willett.

MINUTES OF THE JANUARY MEETING- 1943

The Conchological Club of Southern California met at the new place and date at the Los Angeles Museum, Jan. 24, 1943. This change was decided upon because several of our members were unable, on account of defense work, to meet at the regular time, and because black-out regulations made coming at night hazardous for those living at a distance. There were 30 members present. $3.25 were received in payment of dues for 1943, making a balance on hand of $7.62.

The meeting time and place decided upon by vote of the club was 2 P.M. on the fourth sunday of each month and the place of meeting until further notice was the Los Angeles County Museum. There were no reports from standing committees and the topics and summaries of the papers given are in the February notes.

Effie M. Clark, Secretary.

Mr. E.J. Post, has advised us that his new address is 220 S. Olive St., Los Angeles, Calif.

Charles R. Wright- advises that his present home address is 410 North El Molino Ave., Pasadena, Calif. Dr. Wright is now serving in the United States Navy and stationed at Long Beach. We were happy to have him with us at out last meeting.

The entire club expressed sincere sympathy for our member, Mr. Earl C. Huffman, 356 Stanton St., Pasadena, whose wife, Leona, passed away on Feb. 10. Most of the members were well acquainted with Mrs. Huffman and feel her loss.

Pvt. Glenn R. Webb, 35563604, Station Dispensary, Army Air Base, Dover, Delaware. Just about the time we were congratulating ourselves on having added another very active student to our group of Southern California [illegible], we receive a letter from Glenn advising that he is now stationed about as far away as he can get and stay in the United States. He is apparently wasting no time though because in spite of his ardous duties he advises us of an interesting list of land snails he has been collecting near his present station.

Mrs. Rose B. Parks, 337 11th St., Santa Monica, has a letter from one of her New Zealand correspondents, Miss Phyllis James, 31 Riverdale Road, Avondale, SWS, Auckland, New Zealand. Miss James has extended another cordial invutation to any of our members in the armed forces to partake of her hospitality if they happen to be in New Zealand.

Ruth H. Libby, 817 Carson St., Long Beach, Calif. " Thank you very much for the minutes of the Conchological Club of Southern California. The paper is not only enjoyable and most worth while reading but quite as worth while rereading. I am inclosing a little donation of one dollar ($1,00) which may help continue the good work. Thank you again for remembering me. I was considerably dissapointed that influenza prevented my attending the meeting at your home of the Long Beach club. Also, a duty, as officer in another group which meets the 28th will prevent my attending the meeting at the museum on that date. I regret this very much but hope for better luck next time."

W.J. Bower, 334 Third St., South, St. Petersburg, Florida. " When the minutes of your club for February arrived the other day, I was again reminded that I had omitted the 1½¢ stamps from my last letter. This time I shall not make the same mistake. A few days ago down at Gulfport, I collected a large number of a very tiny shell, Rissoina chesnelli Michaud, by straining the contents of a lot of large dead Pinnas. There was also a colony of live Rissoina on the outside of one Pinna. In case you wish any of these or of the Bittium, please let me know."

Dr. B.R. Bales, 149 West Main St., Circleville, Ohio. It should have cost your reporter several pages out of his #2 ration book for just reading the recent letter from Dr. Bales. After returning from the Safeway store meatless for about ten days, dining on some mustard greens, a few turnips and a sprig of celery, putting the Burch cat out on account of his insistent meows for more mustard greens, can you immagine the sensation when he opened Dr. Bales letter to read " Mrs. Bales canned more than 400 cans of fruit and vegetables from the garden last summer. We have killed two pigs and a small beef (yearling) and she has canned 50 cans of pork and beef. I get our milk daily from the farm and she is making butter twice a week. Our pullets at the farm are just beginning to lay and my share was 4 doz. last week. " etc. Will some one please advise your reporter how to proceed about getting enough gasoline to take a run back to Circleville. Dr. Bales advises that his son is now a Certified Control Tower Operator at the airfield at Walla Walla, Wash.

We have received a very interesting paper by our member Dr. U.S. Grant IV, of the University of California at Los Angeles, " Waves as a Sand-Transporting Agent". This is a separate from the American Journal of Science, Vol. 241, Feb. 1943, pp. 117-123.

The Report of the United States National Museum for 1942 has been received. The amount of fine scientific work that can be done in the middle of the biggest war of all time is downright amazing.

We were very proud to receive the following letter from Dr. Paul Bartsch of the Smithsonian Institution, Washington, D.C.

Dear Mr. Burch:

My, what a wonderful document your Minutes No. 20 is . This certainly speaks for a most wide-awake, thoroughly active, energetic and interested organization, and I wish to congratulate your entire group in having brought about such an institution.

We poor museum workers envy you for coming in contact with the living things. We only receive the lasting remains which we promptly inter in the collection of the National Museum, and this brings me to a point that I wish your membership would realize, namely this : That the collection of the United States National Museum is a national collection which belongs to all the citizens of the United States, and to which individuals like the members of your organization have contributed enormously in the past. They have been largely responsible for the treasures now resting in our collection from your coast, and I wish to appeal through you to your membership to please continue these endeavors so that whenever some one finds material that is out of the range of past experience or proves new and is described that there should be sent to us here at Washington for intercalation in our national collection representative material that will stand for all time for the endeavors of the collector. Remember, the National Museum has no funds for purchase. Congress, in its wisdom, has never considered that phase of contribution so we are altogether dependent upon the helpfulness of interested persons.

Our little staff here, while we gloat over these collections, realize that our position and function is merely one of guardianship of the collection and helpfulness in making them known and being helpful to those who require assistance. We are not like private collectors who can enter into fields of exchanges because our staff is so limited that we have scarsely time to give proper attention to the intercalation of new material and the care of old and the reporting thereon.

I will say this, however, that if any of your members should be building up collections in definite groups and find finally that there are certain gaps of rare things in their collections, if they will drop us a line and let us know what these are and if there are duplicates available in the national collections, we will be glad to help the students in question with material.

Please, at one of your next meetings, bring this letter to the attention of your group and believe us very much interested in your activities.

Truly yours,
Paul Bartsch, Curator,
Division of Mollusks and Cenozoic Invertebrates.

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Professor Trevor Kincaid of the University of Washington, Seattle, Wash. has kindly sent us some more data on the Genus, Entoconcha, Muller.(see Minutes No.17 p 4- Nov. 1942).

ANIMAL PARASITES AND MESSMATES

by- P.J. Van Beneden (published in 1876) (copied from paragraphs on pages 158-159)

" We do not know if this is the place to speak of an animal which excited great attention some years ago, and which was thought to prove the transformation of animals into each other. It is a parasite which, under the form of a gasteropod, lives under peculiar conditions. It is known by the name of Entoconcha. Discovered by J. Muller in an echinoderm of the genus Synapta, its complete development has been vainly sought to be discovered since that time. It is evidently a gasteropod mollusc, allied to the Naticos, and lives in the interior of the body of a Synapta, but we do not yet know all the phases of its evolution. It was at first thought that we had before us an echinoderm in the act of transformation. I wrote to J. Muller immediately after the discovery which he hastened to announce to me, to state that in my opinion, this was only a new instance of parasiticism; parasites are, however, so rare in this class of animals, and their mode of life is so exceptional, that one ought not to be surprised that this fact did not receive at first its true interpretation.

(con.)

" Professor Semper found at the Philippine Islands, in the Holothuria edulis another species of Entoconcha which appears to attach itself to the anal vent of this echinoderm. He gave it the name of Entoconcha mulleri. We have in it a new example of the relations which certain parasites bear to their hosts, and which are the same in both hemispheres."

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The following excerpts from a letter from our member Mr. A. Sorenson, 247 Granite St., Pacific Grove, should be of interest.

" The parcel post will bring you a specimen of the new subspecies Haliotis fulgens turveri Bartsch that was described and named by Dr. Paul Bartsch in the October number of the Nautilus.

I have been asked how I came to discover this abalone when it was well known that I was on the east side of the Gulf of California where no abalones live. Here is how it happened.

In January, 1942 I was in a curio store in Guaymas with Mr. and Mrs. Harry Turver of Santa Cruz. While browsing around Harry noticed a basket with some very rough abalones and called my attention to them. While the color inside was the characteristic peacock blue of the Haliotis fulgens from the west coast of Lower California there was but little else to suggest that species. They were much deeper and rougher and only a few showed any signs of the H. fulgens striations. The next thing was to learn where they came from. That took time. All the dealer knew about them was that they had come across the Gulf from La Paz by way of Santa Rosalia. On receipt of a few of these shells Dr. Bartsch became very much interested as he had found a similar one many years before on the southwest coast of Lower California, but as he had found but one he took it to be a freak. Now, however, when a considerable number were located the matter was worth looking into and their exact location must be found. Inquiries and correspondence finally solved the problem and I learned that they were common in Magdalena Bay and probably some distance north. I have received a number of specimens that came from Magdalena Bay and the one sent you is from there. As far as I know it has never been reported from the northern half of Lower California while the regular H. fulgens is plentiful from San Diego to Cape San Lucas."

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Dr. A. Haven Smith, Orange Union High School, Orange, Calif. " In the Los Angeles Times of to-day (Feb.15) I noticed that some scrap iron was being salvaged from the ocean at the Ocean Park Pier. Gas rationing makes it impossible for me to investigate this material as a source of specimens. This may have come to your attention already. If not, I hope you may be able to follow it up and find some rare specimens. Enclosed you will find one dollar to help with postage and other expenses. Enjoy the minutes very much."

Mr. Edgerton B. Sprague, 1920 Victoria Drive, Santa Ana, Calif. " Enclosed please find a check to help cover costs of the minutes of the Conchological Club. They are the next best thing to going to the meetings. When gas and time are again available I expect to be with the club in person again. With best wishes to all etc"

Dr. James Zetek, Drawer C, Balboa, Canal Zone- " We are very busy in a very busy place, and less help, poor at that. Our warmest and best as always for a real good year."

Mr. W.P. Cook, 2966 Union Ave., San Diego, Calif. Mr. Cook is interested at this time in Pecten hastatus and would like very much to hear from anyone with duplicates of this species to spare.

Mr. Ernest N. Wilcox, 1738 Johnson Ave., San Luis Obispo, Calif. " I would like to preserve some land slugs in formaldehyde as I cant afford to use alcohol at present prices. I have the drug store stock solution of 37% but they cant tell me how much to dilute it. You do not use it full strength do you ? Also, do you put the animals into it alive. I have a couple of specimens of the rather rare Limax flava Muller, that when full grown are nearly as large as a man's finger. They are yellow below, greenish above with tan spots and blue horns."

REPORT ON SCAPHOPODA

to the Conchological Club of Southern California at the January, 1943 meeting

by Tom Burch

While no two authorities seem to agree entirely on the finer points of this group, they all agree that the class needs a great deal more work done on it before anyone can be confident of his assertions.

The information for the following report is taken primarily from Tryon's Manual by Pilsbry, the Monograph of East American Scaphopod Mollusks by Henderson, and to a lesser extent from Oldroyd, Grant and Gale, Reeve, Borradaille and Potts, and others. Some of the statements that I shall make will be those of Mr. George Willett and myself.

A. Organization

The organization in the *Scaphopoda is* greatly simplified. The foot is reduced and specialized for burrowing; there is no head, heart, nor gills; the only sense organs are tentacle-like captacula in *Dentalium* which are also used in securing food (Fig.5) (B. & P.). These *captacula were* first thought to be a special type of gills by some of the early authors. The Scaphopoda possess a radula, which is short,nearly rigid, and curved. The radula is incapable of being used as a rasping organ as in other mollusks, and its function is probably largely as a crushing plate (Pils.). There is a mantle, open at both ends, that secretes the shell. The shell is tubular, open at both ends, and composed of three layers of shell substance.

B. Growth

Growth takes place at *the larger* end and on the inside of the tube. At the same time that this growth is taking place, the tube is absorbed at a slower rate from the smaller end. The slits or notches in the apex (Fig. 9,10) are therefore formed by absorption, being thus wholly different in genesis from similar structures of the peristome in Gastropods.(Pils.).

The Scaphopods successively truncate the shell posteriorly as growth proceeds at the anterior end. This is necessitated not only by the excessive gragility of the early portion but also by the necessity for a larger anal orifice as the amount of water with its load of impurities increases with the size of the animal. The loss of the shell substance is due,occassionally to accidental breakage, largely to chemical erosion by water, but constantly to absorption by the mantle of the animal itself.(Pils.).

These several causes produce an extraordinary variety of forms, even among the individuals of a single species. Stoliczka and some other authors considered these characters sufficient for the determination of genera. Dall attached no systematic importance to the various modifications. Pilsbry claims that while they show much variation, even in the same species, they are still of valye as specific and group characters, but does not place much weight in them. These modifications are primarily the notches and slits mentioned above. (figs. 9 & 10).

C. Method of Living

The Scaphopoda are greatly *specialized for* burrowing, thus the shell is tubular and perforated at the apex. The foot emerges from the larger opening. In *Dentalium* the foot is pointed with a circular epipodial ridge, interrupted dorsally *some distance* from the end, which gives it a bifid shape (fig. 6). In the *Siphonodentalidae* the spipodium is subterminal, not interrupted dorsally, and forms a *disk with a* crenate edge (fig.2-4). It would seem that this expanded disk is capable of contraction to a slender conic form(fig.1); burrowing being effected as in Solen, etc. by thrusting the conic foot downward, then expanding it distally for an anchor, and pulling the shell down by contraction of the foot retractor muscle; the process then being repeated.(Pils.). The apex remains above the surface of the sand, and serves alike for the entrance into and the exit of water from the mantle cavity.

On page 132 in Keep and Baily's *West Coast Shells*, it is stated that the animal throws out little tentacles from the *small end of the* shell to ensnare the infusoria and other minute organisms on which it feeds. All other books, and personal observation place these tentacles (the captacula) at the larger end.

The sexes are separate and the ova laid singly. Since there are no gills, respiration takes place through the mantle.

At present nothing is known of the ecology of the group, but they seem to live in practically all types of bottoms; at least I have dredged them in sand, mud, shale, and gravel.

D. Distribution

Scaphopods are represented in all faunal areas and in all depths from near the tidal zone to the abyssal dephs; they are found, however, mostly in deep water.(Pil

A possible source of error in the listed distribution of species may occur where the continental slope drops swiftly into profound depths, and especially where such declenities are swept by an oceanic current. Thus species living near the upper edge may easily have their dead shells carried far enough to deposit them in the depths. Fish no doubt consume vast quantities of Scaphopods and occasionally eject their shells at considerable distances (Henderson).

E. Classification

The Scaphopoda resemble the Pelecypoda in their bilateral symmetry and in the absense of a head; they resemble the Gastropoda in having a single shell and a radula.

Linnaeus rightly placed the Dentalia under the Mollusca, not from a knowledge of their anatomy but because they had a shell. He associated them with Serpula, an Annilid, and Teredo, a Pelecypod. Later Cuvier and Lamarck removed the Dentalia and the Serpula from the Mollusca and placed them in the Annelida. Deshayes moved the Scaphopoda back into the Mollusca maintaining that they were Cirrobranchiate Mollusca, or Mollusca with filimentous gills.(Reeve). He based his conclusion on the assumption that the captacula were a special type of gill; thus Deshayes put the Dentalia in the correct phylumn because he thought they had a structure they do not possess. He described them as somewhat allied to Patella.

There are a few special terms used in describing Scaphopods that might well be explained here. The following apply to the genus Dentalium:

Posterior- that portion near the pointed or smaller end.
Anterior- that portion near the aperature or large end.
Primary Ribs- the first or original longitudinal ribs appearing on the tip of the shell.
Secondary Ribs- those later appearing on intercalated between the primaries.
" arc" of the shell- measure of the curvature of the shell determined by the distance in mm. from a line connecting the apex and aperature to the highest point above it in the comoave arch of the shell.

The following terms are used in describing the genus Cadulus:

Dorsal- the convex side of the shell
Ventral- the concave side of the shell

There is some doubt as to which side is really which.

Equator- the section of maximum diameter of the shell. (Henderson).

* * * *

The class includes but two families- Dentaliidae and Siphonodentaliidae The distinction between these two families~~-is based u~~pon; (1) differences in the median tooth of the radula;(2) the form of the foot; and (3) certain quite definite shell characters (Henderson).

In the Dentaliidae, (1), the median tooth of the radula is twice as wide as long (fig.7); (2), the foot is conical and pointed, surrounded by an epipodial process resembling a wing-shaped sheath, which is interrupted or slit , like the break in a fold, on one side; and (3), the shell has the greatest diameter at the aperature, and the shell is almost always, to some extent at least, sculptured. (Henderson). Reeve in his Conchologica Systematica states that the design for the Doric columns came from species of Dentalium.

In Siphonodentaliidae , (1), the median tooth of the radula is less than double its length (fig. 8); (2) , the foot lacks any epipodial processes, and is either a slender vermiform organ or is expanded on the end into a symmetrical disk, with a fluted or indented border (figs.1-4); and (3) the shell is generally contracted at the aperature, and, except in one restricted group, Entalina (fig.3) , the shell wholly lacks sculptural features, being smooth and glossy in texture (Hend.)

The family Dentaliidae contains but one genus, Dentalium. This has been subdivided into a number of subgenera based chiefly upon apical characters of the shell. The actual value of these apical characters for the purpose of classification , and therefore the value of the subgenera based upon them, is not altogether assured (Henderson).

I am not going tobore you with a disertation upon the minute differences between the various species of Pacific Coast Scaphopods, most of which I doubt are in your collections- - at least only a few are in mine. I shall make but a few comments that I think might interest you.

The three common shallow water species of Dentalium that I think you probably have, are Dentalium neohexagonum, D. semipolitum, and D. pretiosum.

Dentalium neohexagonum Pilsbry and Sharp is the common six sided tooth shell that is occasionally cast upon the beaches and is common in the Pleistocene deposits in this vicinity. I have dredged this species from as shallow as I have dredged to as deep as I have dredged which is from 10 fathoms to over 100 fathoms. It ranges from Monterey to Central America.

Dentalium semipolitum Broderip and Sowerby is a round form with striations near the apex which dissapear towards the aperature. It ranges from San Pedro to La Paz, Lower Calif.

Dentalium hannai Baker differs from Dentalium semipolitum only in having a slit at the apex. It was originally thought ~~that this was a~~ southern form, however, it is also found off San Pedro. Mr. George Willett told me that out of twenty-five specimens that he dredged off San Pedro, nine were Dentalium hannai and fourteen were Dentalium semipolitum. Mr. Willett suggests that the slit may be but a secondary sex character.

Dentalium pretiosum Sowerby has a smooth solid shell. It ranges from Alaska to San Diego and is found in the San Pedro pleistocene. We have taken specimens from Monterey on shale bottom that are being described as a new species. In olden times the Indians used these shells for money, stringing them on long threads , and prized them highly. This explains why the name Dentalium indianorum has also been applied to this species. The Indians gathered ~~the shells with a~~ crude instrument shaped like a comb with few teeth, fastened to the end of a spear. While his squaw slowly rowed his boat along, the brave Indian plunged his comb like spear into the sand, if he made a successful thrust, one or more of these creatures would be caught upon the teeth of the comb ; after the expedition they wer prepared for stringing . This was the primitive way of making money on the Pacific Coast. A fathom string of 25 shells , called a Hi-qua, was valued at about L50; and a string of the same length, made up of 40 smaller, and therefore less valuable shells, would buy a slave. The California Indians unit of currency was a string the length of a man's arm, which they called alli-a-cheek. When the traders saw how much the Indians valued their tooth shells, they imported many from the Mediterranean where they were common and traded them to to the Indians. Inflation and devaluation of the Indian's money was the result. (Keep & Baily & Stearns).

Dentalium vallicolens Raymond, 1904, is a rare species that ranges from Fuca Straig to the Gulf of California. This is our largest California species and has longitudi striations that fade out anteriorly. This species occurs off Redondo Beach in one small isolated spot of grey gravel in 75 fathoms.

Dentalium rectius Carpenter, 1864 is a long slender smooth species that is fairly common in 50 fathoms on mud bottom off Redondo Beach. It ranges from Alaska to Panama Bay.

Dentalium watsoni Pilsbry & Sharp , is longer and more slender than D. rectius. We have dredged two specimens in 125 fathoms off Redondo Beach. This species ranges from Oregon to San Diego, Calif.

Dall and Oldroyd include all of the genera of Scaphopoda under the one family Dentaliidae. Pilsbry, Henderson, and Johnson divide them into two families, Dentaliida and Siphonodentaliidae. Grant and Gale use the family Cadulidae instead of Siphonodentaliidae, since the genus Cadulus is 15 years older than Siphonodentalium.

" In recent years some authors have changed well-known family names on the pretext that they were not formed from the names of the oldest genus included in the family. The International Commission on Nomenclature has now considered this in opinion 133, concluding that ' the original author of a family name is free to select any contained genus as the nomenclatorial type of that family. It is not necessary to select the oldest genus as type genus of the family." Nautilus, 1937 v.51:1 p.33. From the above it would seem that the family name should be Siphonodentaliidae and not Cadulidae.

The family Siphonodentaliidae contains three genera , Entalina, Siphonodentalium, and Cadulus. Entalina and Siphonodentalium have the greatest diameter at the aperature ; Cadulus has the section of greatest diameter or equator, posterior to the aperture.

The angled apex and sculptural features of Entalina suggest a true Dentalium , but the form of the foot and other anatomical features indicated a position under Siphonodentaliidae. We have no representative of this genus described from this coast.

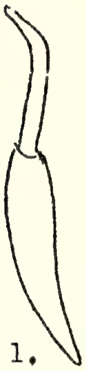
Siphonodentalium is a widely distributed genus of few species confined to deep water except in high latitudes. Dall, Oldroyd and others place Cadulus quadrifissatum Pilsbry under the genus Siphonodentalium in spite of the fact that it was described as a Cadulus by Pilsbry and definitely does not answer the description of a Siphonodentalium as the largest diameter is not at the aperture. Another factor pointing away from Siphonodentalium is the shallow water in which it is found-- 10 fathoms up. Henderson records the East American species as ranging from nearly a hundred fathoms to well over a thousand fathoms with most coming from around five hundred fathoms. Perhaps when more dredging has been done at these depths corresponding species may be found.

As a rule the species of the genus Cadulus are not very widely distributed. The aperture is usually somewhat contracted, usually very oblique, and never the section of greatest diameter of the shell. The genus has been divided into subgenera which Henderson says are of doubtful value. In a general way it may be said that the large and medium sized species fall under Platyschides, the small and slender forms under Gadila, and the small bulbous species under Cadulus, while those of very prominet deep apical slits are Polyschides. (Henderson).

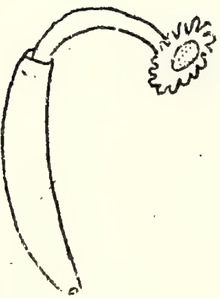
Almost all of our Cadulus belong to the subgenus Gadila; Cadulus californicus is a Platyschides ; and Cadulus quadrifissatum is a Polyschides.

Cadulus fusiformis and Cadulus quadrifissatum are our two commonest species. Cadulus fusiformis is one of the slenderest and least bowed species on our coast. It ranges from Monterey to Cape San Lucas. We have dredged this form from Monterey to Ensenada, and have found it in many of our local Pleistocene deposits.
Cadulus quadrifissatum Pilsbry is easily distinguished by the prominent apical slits. We have dredged this form from Santa Monica to San Diego and found it in local Pleistocene deposits.
Cadulus californicus Pilsbry and Sharp is the largest form fromm our coast and differs from Cadulus tolmei Dall only in size, in being more inflated, and in having the equator closer to the aperture. Cadulus tolmei is described as having a simple apex, while Cadulus californicus is described as having a notched apex. If the tip of a Cadulus californicus were broken off, it would answer the description of Cadulus tolmei perfectly. The Lowe collection in the Natural History Museum of San Diego has three specimens labelled Cadulus californicus from 60 fathoms off San Diego, and four specimens labelled Cadulus tolmei from 634 fathoms off San Diego. The latter appear to me to be merely Cadulus californicus with the tips broken off which gives them the appearance of having the equator further posterior. Only one specimen of Cadulus tolmei seemed to be a live specimen and it was obviously broken. Mr. A.M. Strong, however, has recently found some specimens of a Cadulus from the Gulf of California that are very similar to Cadulus californicus and C. tolmei but are much smaller. Mr. Strong believes that this is a new species of Cadulus and that both Cadulus californicus and C. tolmei are good species.
Cadulus hepburni Dall, Cadulus aberrans Whiteaves, and Cadulus stearnsii Pilsbry & Sharp are also found along our coast.

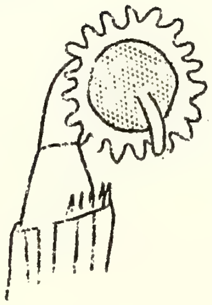
SCAPAPODA



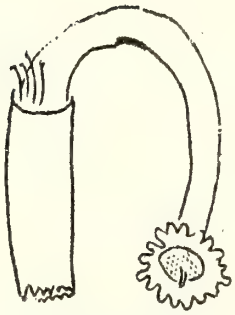
1.



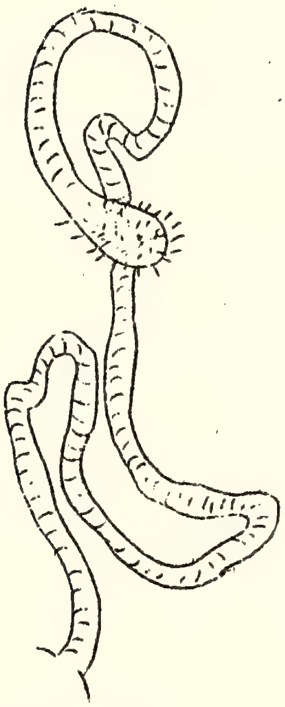
2. *Cadulus*



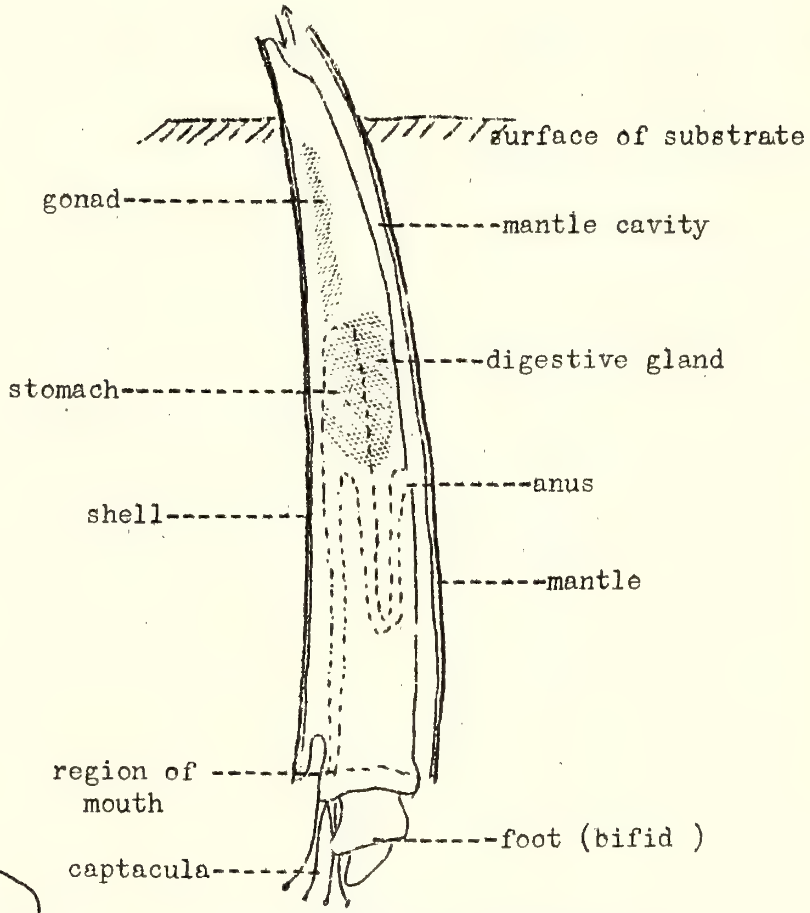
3. *Entalina*



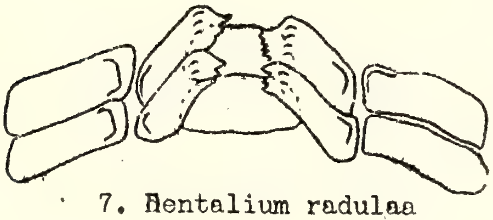
4. *Siphonodentalium*



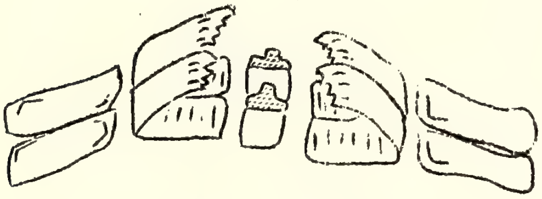
5. Captaculam


surface of substrate
gonad
mantle cavity
digestive gland
stomach
anus
shell
mantle
region of
mouth
foot (bifid)
captacula

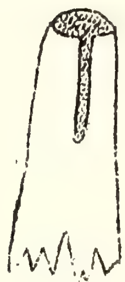
6. Dentalium (semidigramatic)



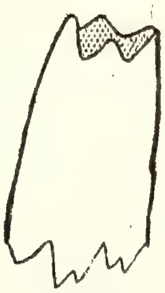
7. Dentalium radulaa



8. Cadulus radula



9. Dentalium



10. Polyschides

LONG BEACH SHELL CLUB

The club met Sunday afternoon, Feb.7 at 2 P.M. at the home of Mr. and Mrs. E.P. Chace, 724 11th St., San Pedro, Calif. In the absense of Mr. E.P. Baker, Mrs. Ralph Bormann took the minutes. The minutes of the previous meeting were approved as mimeographed in the minutes of the Conchological Club of Southern California by the reporter, John Q. Burch. Dr. Howard R. Hill, of the Los Angeles Museum, reported on the exhibit of shells placed by the club and the museum in the Service Men's Club of Long Beach. It was moved and seconded and voted that the secretary write a letter to Mr. John H. Clarke, 1246 S. Hope St., Los Angeles to inform him that he has been placed on the list of members. Mrs. Linderman, publicity chairman, was requested to write a letter to the newspapers thanking them for the publicity given the club during the past year. It was voted that letters of thanks be sent to Dr. Howard R. Hill of the Los Angeles Museum and to Mr. George of the Recreation Commission of Long Beach for the help given the committee with the mounting of the collection of shells in the Service Men's Club of Long Beach. Dr. Howard R. Hill, program chairman, announced that Mr. E.P. Chace was speaker for the afternoon and that his topic was to be " Pholads and Allied Groups". There being no further business, the meeting was adjourned.

Mary Bormann, Sec. pro-tem.

The following will be a brief account of the very interesting report made to the above meeting of the Long Beach Shell Club by Mr. E.P. Chace on the subject of " Pholads and Allied Groups".

Pholads are boring bivalves and are present in one form or another in all seas and so far as I have been able to find out . Some genera are rock borers and others bore in wood. Bulletin 112 lists species from Alaska to the Gulf and the Peruvian Fauna List carries all the genera except Zirfaea down to Ecuador. The shells of Pholads are bivalve but in most genera there are one or more accessory plates and these will be mentioned under each genus. In nearly all the Pholads there is a distinct difference in sculpture between the anterior and the posterior portions of the valves, frequently separated by a prominent constriction (called a rib in some descriptions). Other characteristics are- no hinge teeth and no ligament or resilium but a prominent shelly arm projecting from the umbonal cavity into the central cavity of the valve. In regard to the manner of boring their holes in the rocks, Johnson and Snook " Seashore Animals of the Pacific Coast" give one account on pages 466-467. (they were read). " Introduction to Conchology" by Johnson, 1850 gives another account based on observations made on the English coast. Pages 153-157-158 (were read). Read also Woodward " A Manual of the Mollusca" page 504 and footnote.

There are 7 genera according to Dall's list in Bulletin 112.
Barnea, Leach 1826 (Pholas candidi L.)- Zirfaea,(Leach) Gray 1847 (P. crispata) Parapholas, Conrad 1837 (P. californica),-Pholadidea, Turton 1819,-Martesia(Leach Blainville 1824 - Navea, Gray 1851 - Xylophaga, Turton 1822.

Barnea- Shells are fragile, open at both ends and have a long narrow accessory plate on the dorsal side. Our local species, Barnea pacifica is particularly fragile. Years ago I dug them in a bank of clay at the entrance to Alamitos Bay.

Pholadidea- P. parva Tryon is the smallest of the Pholadideas and is most commonly found boring in the shells of Haliotis rufescens. It is the cause of many of the ' Blister Pearls'. This species has a plate over the umbones. The " callus" portion that closes the anterior hiatus in mature specimens is large and swollen. One description speaks of it as beaked. The foot portion of this animal must be very large in proportion to the rest of the animal. The shell of the Abalone furnishes shelter only. The Pholads are not- so far as I know- parasitic. Horny flaps form a cup at the posterior end.
Pholadidea rostrata Valenciennes 1846- This is placed in subgenus Nettastomella Cpr. It differs from the other Pholadideas in having shell tips at the posterior portions of the shells and in not closing in the anterior end, or if it is closed in it is with a tissue thin callus. It is one of the smaller species, about 30mm is a good sized specimen. It is common in pieces of shale washed in at Pt. Fermin and other places along the coast. Range is Vancouver id. to San Diego.

Pholadidea ovoidea Gould - This is a large species, short and globose. The neck is long and cannot be retracted within the shell as in other species. Also the neck has wart like processes or growths which- so far as I know- are not present on other species. In the immature shells the anterior gape is very large, the posterior portion evenly rounded and only a little longer than the anterior portion. The mature shell is closed anteriorly and has a small plate over the umbones. We collected many years before we found a specimen of this borer, but of recent years we have taken it several times. One from Chama and worm tube masses at Reef Point, others in shale at Pt, Fermin. Not uncommon in the shale blocks that wash in from the bottom of Monterey Bay.

Pholadidea penita Conrad - is the type of Penitella, a section which may be disregarded (Grant and Gale.) . It is similar to Parapholas but smaller, more globose at the anterior end and with leatherlike flaps at the posterior end. Bores in rocks and is more common than Parapholas. The two are frequently found in the same ledges of rock. Its prominent identification mark is the leather like flaps. It does not have the accessory plates dealing the dorsal and ventral margins.

P. penita concammerata Deshayes 1839- Description is quite similar to the P. penita and there are no comparative notes. The figures in Oldroyd show very little difference. P. penita sagitta Stearns - The description says " shorter and with a corresponding widening of the dorsal appendages of the adult".

Pholadidea melanura Sowerby 1834- Described and figured in the Oldroyd- type loc. Monte Cristo, Ecuador. Ranges to Redondo Beach (Bull. 112). I have never seen a specimen nor did Mr. A.M. Strong find any records of specimens having been taken.

Martesia- We have 2 species listed- Martesia xylophaga Val. named and figured but with no description. It may be a synonym of M. striata Sowerby, type loc. Pac. Coast Martesia intercalata Carp., listed by Dall in Bull 112 as from San Francisco to Panama. Type loc. is Mazatlan, Mex. Description in Oldroyd.

The Martesias bore in wood and close the anterior end at maturity. The description calls for a semi-corneous closure. There are 3 Florida species. Two of them bore in wood and the other, M. caribaea Orb. is found only in " artificial" limestone at St. Augustine or boring in other shells. One species of Martesia is found in a river in Borneo, 12 miles from the coast- apparently a salt water species that has adapted itself to fresh water ?? The 3 Florida species are illustrated in the Maxwell Smith " East Coast Shells".

Zirfaea- Has a heavier shell than Barnea, also shorter and broader. It has a small somewhat triangular accessory plate over the umbones. Lives in the red clay just inside Anaheim Bay, and also in many other places. Spines on the anterior portion of the shell are well developed. In the older lists of shells from this coast it was called Z. crispata, which is a Florida shell. Tryon in 1863 separated it from the east coast shell and described it giving it the name Zirfaea gabbi Tryon. Tryon's type is in the A.N.S.P. and when Mr. H.N. Lowe examined it in 1931 he discovered that the type specimen was a specimen of P. penita concammerata. That being the case, the name Z. gabbi had to be abandoned in spite of the fact that the description is a description of a Zirfaea and fits our shell very well. Mr. Lowe renamed the shell Zirfaea pilsbryi Lowe and published a description in the Nautilus Mrs. Oldroyd's figure in " Marine Shellso of the W.C." is a figure of Z. pilsbryi, copied from a Univ. of Calif. publication.

Parapholas- P. californica Conrad- The young shells are separate and open at both ends. The mature shells are closed in tightly at the anterior end and there are accessory plates at both dorsal and ventral edges that seal the valves together. The posterior portion of the valves are covered with fibrous plates. The posterior (upper) portion of the burrow is sometimes filled in with a rock like substance that reduces the area of the opening. This species lives in shale rock and heavy tools are needed to dig them out. Sometimes found in blocks of rock washed in from deeper water and in that case they can be broken out with a hammer. I have dug them at Pt. Fermin and below Balboa, also in shale blocks washed in on the Del Monte Beach, Monterey Bay.

Navea Gray 1851- Shell closed behind but with a very large anterior gape. Never closed- valves with a deeply impressed subcentral " rib".
N. subglobosa Gray 1851- The specimens will give you a better idea of the shell than a detailed description. It has a small extra plate over the umbones. It is commonly found in the shells of Haliotis rufescens, and may live in the shells of other abalones. The range given in Bull. 112 is Lobitas to Monterey. I think this should be to Morro Bay. My reason for saying this is that the abalone divers workinng out of Monterey go as far south a Morro. Also there are divers working out of Morro Bay and I am satisfied that the red abalone shells at Morro Bay have the Naveas in them. The range may be extended by careful collecting at other places.
Xylophaga Turton 1822- Shell globular with a transverse furrow, gaping in front closed behind. Pedal processes short and curved, anterior margins reflected, covered by 2 small accessory valves (plates)- Burrow is oval- and lined with shell. We have 2 species listed from this coast. X. mexicana Dall 1908 - Type loc. 141 ftms. off Acapulco, Mex. Dimentions -legth 4.2, ht. 5.2, diam. 4. mm. A long desc. in Oldroyd. X. californica Bartsch 1921- Type loc. Point Pinos Light, Calif.

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" An Annotated Check List of the Gastropods of Cape Arago, Oregon" by A. Myra Keen, Stanford University and Charlotte L. Doty, Oregon Institute of Marine Biology has been received. This interesting paper is published by Oregon State College, Corvallis, Oregon, and should certainly be added to the libraries of all students of the molluscan fauna of this coast. It is carefully prepared with an index map of the region. Several interesting and perhaps debatable questions of taxonomy are raised. For example on page 7 " As has been pointed out by Rehder (Proc. Biol . Soc. Wash., Vol. 50, p. 116, 1937), Martyn's names are nomenclaturally invalid; therefore the next availayle synonyms are adopted in this paper". Hence the use of Zizyphinus filosus (Wood), 1828 and the placing in synonymy of Calliostoma costatum (Martyn).

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The Journal of Conchology, Vol.22, No.1, 12th Jan., 1943 has been delivered. This is the organ of the Conchological Society of Great Britain and Ireland. The several fine articles in this issue seem devoted to the British non-marine mollusca

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A few notes from our members and friends follow.
Miss Verna Mann, 324 N. Shelton St., Burbank, Calif. Miss Mann wishes to know if there are any other collectors in or near her city of Burbank. Your reporter wishes to thank her for her contribution of stamps to the Minutes.
Kenneth L. Althaus, 319 E. 110th St., Los Angeles, Calif. " In the firm belief that this war connot go on forever, I have bought a place at Corona Del Mar, where when it is all over, I hope to live. Naturally that can mean but one thing- a boat and collecting, with an open house to all collectors." And many thanks, Kenneth, for the dollar donation to the Minutes fund.
R.E. Galbreath, R1, Box 48, Newhall, Calif. Mr. Galbreath is not a member of our club but many of our members have enjoyed his hospitality and valuable advice on collecting in his locality. While interested in all groups his specialty is the study of the fossils of the coast range. Mr. Galbreath has written of finding an interesting vertebrate about 3½ in. over all in lava.
John H. Clarke, 1246 S. Hope St., Los Angeles, Calif. " I am in throes of putting my entire collection under glass and plastic- that is, glass and plastic topped trays. It is proving a large job but I'm sure I'll get a lot of satisfaction out of it when completed." " The collection soon is going into storage , in preparation for a move that will be necessitated by my forthcoming marriage-- when I can find a proper place with an extra room that can be made into a museum for accomodation of two combined collections and, in addition, a collection of minerals, one of stamps, and other things. I shall leave the collection in storage until I find more or less permanent quarters, which, of course, must have the approval of my impending family."
Ralph Bormann, Jr. has enlisted with the Naval Reserve and is taking an engineering course at the Junior College in Long Beach.

We were sincerely shocked to hear of the closing of the San Diego Museum of Natural History. The United States Navy is taking over the three huge museum buildings in Balboa Park, the Museum of Natural History, Fine Arts Gallery, and the Museum of Man. No one will miss the museum more than the students of conchology of Southern California. The San Diego Museum not only contains several of the finest collections of west coast shells ever prepared, Herbet Lowe, Dr. Fred Baker etc. etc. but has been unusually fortunate in having a very able staff. The genial director, Dr. Clinton G. Abbott always made every visitor leave with a feeling of being indebted to the museum, and all students of shells who have been fortunate enough to take a problem to Miss Viola S. Bristol, the curator of the huge shell collection, will always recall the enthusiastic co-operation met. And in addition we had available one of the most complete scientific libraries on the coast. It has been the custom of many of us to do as much work on a problem as we could complete here and then have a special place to keep material marked to check with specimens as well as literature available only on our next visit to the San Diego Museum. The closing of this fine institution means that many problems will simply have to be shelved for the duration or until the San Diego material is again available.

We understand that the herculaen task of packing for storage the millions of objects in the museum is being done at this time.

Of course, no one is going to begrudge the use of these fine buildings by our Navy. It is only another reason to inspire us to work the harder for an early victory.

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Minutes of the February Meeting of the Conchological Club of Sputhern California

The Feb. meeting of the Conchological Club of So. Calif. was held in the director's room of the Las Angeles County Museum on Feb. 28th, 1943. Pres. E.P. Baker called the meeting to order at 2:00 P.M.. While not every one was there by that time 26 members and guests were counted during the afternoon. As Sec. Clark was delayed the minutes of the Jan. meeting were omitted and Mrs. E.P. Chace appointed Sec. pro. tem.

In the interests of accuracy the name of the " Nomenclature Committee" was changed to " Nomenclature and Publications Committee". Under this title John Burch reported on a check list of Coos Bay mollusca recently published by Dr. A.M. Keen and Mrs. Charlotte Doty. Attention was called to the helpful ecological notes, and to the statement that Dr. Rehder (U.S.N.M.) had pointed out in 1937 that since Martyn was not consistently binomial his names were not valid- for which reason- in the paper under discussion Calliostoma costatum Martyn was replaced by Ziziphinus filosus (Wood) 1828 etc.

The Jan. Nautilus was at hand but did not contain anything on local mollusca. Mr. Morris Caruthers reported the death of Mrs. Earl Huffman about Feb. 14th, and Dr. Hill announced that Dr. Thwing, a long ago member of the club had had a severe stroke on Feb. 25th and was very low.

The program committee reported that Dr. Gregg, to whom the Feb. meeting had been assigned, had not been well and was unable to prepare a paper so Mr. George Willett was speaking in his stead.

" Mr. Willett took as his topic " West Coast Pectens" and illustrated with specimens from his own collection. Among the points of peculiar interest were the following: Dr. Hertlein is quoted as being doubtful that true P. islandicus Mull. occurs in the Pacific, although P. islandicus beringianus Midd. is probably correctly placed as a subspecies of P. islandicus. San Pedro fossils of P. caurinus Gld. do not run as large as the living Alaska form. Pecten delosii Arnold is probably the uneroded young of typical P. latiauritus.

The figures given on Plate 14, # 5 and 6 by Oldroyd " The Marine Shells of the West Coast of North America" as Pecten randolphi are those used by Dr. Dall for Pecten davidsoni, and Pecten tillamookense Arnold is very close to Pecten randolphi Dall.

(con.)

In the general discussion following Mr. Willett's helpful talk, Tom Burch reported having put a number of young Pecten latiauritus in a circulating aquarium where they did well for several weeks. They would attach themselves to one spot and remain there for several days, then suddenly move to another. Dr. Hill reported that the " Anton Dohrn" once brought up a large kelp from about 25 ftms. with about 60 living Pecten hastatus attached. This species is usually covered with slime and dirt, but not with sponge as is so frequently found with P. hindsii and P. hericius.

After discussion of the Pectens, Dr. Hill unlocked the four beautiful cabinet of shells loaned to the museum by Mrs. Fred Lewis when she moved to Puget Sound. These shells have been chosen and arranged purely for their beauty and make a wonderful display which was very much enjoyed. Adjournment was in the usual manner. Elsie M. Chace, Sec. pro. tem.

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Dr. A. Myra Keen of Stanford University reports that she has a small class studying the gastropods. They have been through the Muricidae and have some interesting opinions. We are looking forward to the publication of those ' opinions'.

Mr. and Mrs. W.P. Cook, 2966 Union Ave., San Diego, Calif. honored us with a call Sunday afternoon, March 7. They had attended the meeting of the Long Beach Shell Club at the Ulrich home in Wilmington. Mr. Cook had two large trays of rare Cypraea from his fine cabinets. Mr. Cook makes his own mounts of uniform sizes so that they fit his cabinet drawers perfectly. Your reporter would indignantly deny an assertion that he is the least bit piggish or envious but the sight of row on row of perfectly mounted specimens of rare species of Cypraea that he has been trying without success to get for years just does something to you.

Dr. E.W. and D.S. Gifford, 2535 Le Conte Ave., Berkeley, Calif. honored us by being our house guests over a week end in early February. Their interest at this time is in the Olividae of which family they are making a detailed study. So we were happy to be able to take them collecting and to use the common expression think we " went to town" on the Olividae at Anaheim Landing. After leaving us they proceeded down the coast to San Diego County to be the guests of Miss Edna N. Wilson. We have a letter from them advising us that their San Diego trip was also a decided success conchologically and otherwise, so we hope and expect to hear of some interesting conclusions on several questionable points connected with this group.

Pvt. H.V. Geib, 539th Bombardment Squad, Davis Monthan Field, Tuscon, Arizona. Advises that he is hoping and expecting shortly to be again stationed in San Diego and to join us in some of our shell activities. Of course, he will be cordially welcomed.

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We have just received a separate from the Proceedings of the United States National Museum, Vol. 93, No. 3161- New Marine Mollusks from the Antillean Region, by Dr. Harald A. Rehder.

Dr. B.R. Bales wrote an article on collecting last year which we had better get out and review. Collecting new species is considered a first class triumph for any collector not to mention such a feat as collecting six new species including a new genus to be described in one publication of the U.S.N.M. Our friends Ted Bayer and Dr. T. Van Hyning of Gainesville, Fla. and Dr. Maxwell Smith of Lantana, Florida are also members of this group of super-collectors.

This fine paper by Dr. Rehder should be carefully checked because it is probable that some of us have certain of the species described in our cabinets under other labels..

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Dr. Henry A. Pilsbry was said to have been prolonging his stay in Lantana, Florida. No doubt the heating oil shortage in Philadelphia has had something to do with this. However, Dr. Pilsbry must be engrossed in the preparation of his last vol. which will, of course, include the Florida Liguus.

THE LONG BEACH SHELL CLUB

The next place of meeting will be at the home of Mr. and Mrs. Ralph Borman, 4331 Vermont St., Long Beach, Calif. Time- April 4, Sanday afternoon- 2:30 P.M. The program will be in charge of Mr. Borman who will talk on Mytilidae.

Minutes of the March Meeting, 1943

The Long Beach Shell Club met at the home of the Ulrich's, 1049 Island Ave., Wilmington, Calif. on the afternoon of March 7th, Sunday at 2:30 o'clock. The secretary and his wife were early and found Bill in the middle of the floor with his shel all around him, fingering and ' gloating' over his beauties. And BEAUTIES they surely are.

The meeting was called to order by the president Mr. Ralph Borman, and the reading of the minutes was passed up as they had been sent to John Burch for printing in the Minutes of the Conchological Club of Southern California and will be released later. In order to corelate the minutes of the two clubs, last months and this months minutes will be printed in one issue (our next) and thence will be regular. No unfinished business was reported.

It was suggested that cards be sent out announcing the where-a-bouts of the next meeting place, at least two weeks previous to the meeting, as many of our members are extraordinarily busy these hectic days.

The Nomenclature Committee reported on articles from the Nautilus and presented a complimentary copy of Keen and Doty's " An Annotated Check List of Cape Arago, Oregon" to the club library.

One of our members, Dorothy Banner, whom we have missed for some time, was reported married and living in Seward, Alaska. Now Mrs. Ralph Hooper. Those in charge of the mailing list please take notice.

Mr. W.P. Cook, a visiting member of the Southern California club, announced that the Navy had taken over the San Diego Museum and that all exhibits were to be moved and stored for the duration.

Dr. Howard R. Hill, Chairman of our Program Committee, being the speaker of the day at the Los Angeles Museum and so absent from the club meeting. In his absence the president introduced the speaker of the day, our genial host, Mr. E.N. Ulrich and the subject " Cypraeas".

With many cases of beautiful specimens from all over the world, ' Bill', stating that he had been severely criticized by his spouse for his unscientific manner of address the last time he had spoken, began his speech in Greek and Latin. Noticing the blank looks of his listeners, he switched to his notes and said he'd talk as he felt like and take the consequences. What he said was exceedingly interesting as proved by the fact that the secretary was too interested to take further notes. The Printer will have to get Bill to furnish his own notes.

Following the program, Mrs. Ulrich, assisted by several of the lady members, served delightful refreshments, reminders of the soon to be St. Patrick's day.

There were 18 members present, with four visitors, one of whom, Grace Stillwell 337 Cedar Ave., Long Beach, paid her dues and became a member.

****** E.P. Baker, Secretary. *****

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Dr. Clinton D. Hubbard, 2304 Gage Ave., Huntington, Park, Calif. and member of the Conchological Club of Southern California, exhibited his shells again at the Hobby Show in Huntington Park and spoke concerning them, one evening.

Miss Ethel Donaldson, daughter of Mr. and Mrs. E.P. Baker, exhibited some of the Baker collection and spoke concerning the geographic phase of them to the Downey Teacher's Association. It was a decided 'hit' with the teachers. Miss Donaldson teaches at the Alameda school in Downey and was president of the association last yr

Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Washington. We had been wondering why we had not heard from our old friend Eyerdam, usually a splendid correspondent. He is employed in the shipyards as is your reporter at this time but the reason for not having heard from him is that he has just recovered from an attack of pneumonia complicated by arthritis and has been laid up for some six weeks. He is back to work but still in considerable pain.

Dr. Harald A. Rehder in his recent publication in the Proceedings of the U.S. National Museum " New Marine Mollusks From the Antillean Region" No. 3161, Vol. 93. touches upon the fauna of this coast in several places. For example, many of us have specimens of the shell usually labelled Odostomia (Ividella) pedroana Dall and Bartsch 1909. Dr. Rehder concludes that Peristichia Dall, 1889 should be raised to full generic rank and include the above species. Some good logical reasons and a fair figure support the theory of changing our labels on the above species to Peristichia.

Dr. Rehder also describes a new genus Glyphepithema Rehder 1943 giving as the genotype Natica idiopoma Pilsbry and Lowe 1932 (range from Cape San Lucas to Panama.)

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We have just received the following letter from Miss Viola S. Bristol, Curator of Mollusks, San Diego Museum of Natural History.

" The San Diego Society of Natural History will still carry on in the wing of our building, ground floor, which formerly housed the Scientific Library, lecture hall etc. We are allowed to keep the storage room where the duplicate conchological material is stored but it will be sealed. We feel very fortunate that the material stored there will not have to be all moved out. I shall, however, try to take as much of the Lowe duplicates to the new location as we have room for, the balance being stored for the duration. We are waiting now for the Scientific Library to move out to State College. The display cases of shells and corals will be loaned for exhibit in the various schools until such time as we shall again have room for them.

It was quite a shock to us all, as well as to the public, when the order came to vacate the building immediately. It seemed such a Herculean task to move everything but work has progressed rapidly and the Navy has furnished 30 or 40 men to help and the laboratories and Mr. Abbott's office will soon be quite comfortably housed and ready to take up their work again. As far as I know, there will be no change in the personnel of the small staff we now have."

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LIST OF MOLLUSCA FOUND IN "ANOMIA BED"
VERMONT AVENUE APPROXIMATELY ONE BLOCK SOUTH OF SEPULVEDA BOULEVARD
COMPILED BY MISS EDNA COOK AND MRS. EFFIE CLARK. ARRANGED BY MRS. ELAINE EDMONDS.

BI-VALVES

ALIGENA CERRITENSIS – ARNOLD
ANOMIA PERUVIANA – ORBIGNY
APOLYMETIS BIANGULATA – CARPENTER
ARCA PERLABIATA – GRANT & GALE
BARNEA PACIFICA – STEARNS
CARDIUM BIANGULATUM – SOWERBY
CARDIUM (LAEVICARDIUM) ELATUM – SOWERBY
CARDIUM PROCERUM – SOWERBY
CARDIUM QUADRAGENARIUM – CONRAD
CARDIUM SUBSTRIATUM – CONRAD
CHALMYS CIRCULARIS – SOWERBY
CHAMA EXOGYRA – CONRAD
CHIONE FLUCTIFRAGA – SOWERBY
CHIONE GUIDIA – BRODERIP & SOWERBY
CHIONE NEGLECTA – SOWERBY
CHIONE SIMILLIMA – SOWERBY
CHIONE SUCCINCTA – VALENCIENNES
COMPSOMYAX SUBDIAPHANA – CARPENTER
COOPERELLA SUBDIAPHANA – CARPENTER
CORBULA LUTEOLA – CARPENTER
CRASSINELLA BRANNERI – ARNOLD
CRASSINELLA MURICIFORMIS – BERRY
CRYPTOMYA CALIFORNICA – CONRAD
DONAX CALIFORNICA – CONRAD
DONAX GOULDI – DALL
DOSINIA PONDEROSA – GRAY
GLYCIMERIS SEPTENTRIONALIS – MIDDENDORF
KELLIA SUBORBICULARIS – MONTAGU
LUCINA NUTTALLII – CONRAD
MACOMA SECTA – CONRAD
MACTRA CALIFORNICA – CONRAD
MACTRA NASUTA – GOULD – SAY
MYA TRUNCATA – LINNAEUS
MYTILUS ADAMSIANUS – DUNKER
NUCULA EXIGUA – SOWERBY
OSTREA LURIDA EXPANSA – CARPENTER
OSTREA LURIDA RUFOIDES – CARPENTER
PECTIN LATIAURITUS – CONRAD
PERIPLOMA PLANIUSCULA – SOWERBY (HINGE)
PETRICOLA DENTICULATA – SOWERBY
PETRICOLA PHOLADIFORMIS – LAMARK
PETRICOLA TELLAMYALIS – CARPENTER
PSEPHIDIA OVALIS – DALL
SANGUNOLARIA NUTTALLII – CONRAD
SCHIZATHARUS NUTTALLII – CONRAD
SEMELE DECISA – CONRAD
SEMELE INCONGRUA – CARPENTER
SEMELE PULCHRA – SOWERBY
SOLEN SICARIUS – GOULD
SPISULA FALCATA – GOULD
TAGELUS CALIFORNIANUS – CONRAD
TARAS ORBELLUS – GOULD
TARAS PARALIS SERICATA – REEVE
TELLINA BUTTONI – DALL
TELLINA CARPENTERI – DALL
TELLINA MODESTUS – CARPENTER
TELLINA MEROPSIS – DALL
THRACIA SP. ——
TRANSINELLA TANTILLA – GOULD
ZIRFEA GABBI – TYRON

UNIVALVES

ACANTHINA SPIRATA – BLAINVILLE
ACMAE SCABRA – GOULD
ACTEOCINA CARINATA – GOULD
ACTEOCINA CULCITELLA – GOULD
ACTEOCINA EXIMIA – BAIRD
ACTEOCINA OLDROYDI – DALL
ACTEON TRASKI – STEARNS
AESOPUS CHRYSALLOIDES – CARPENTER
AESOPUS SANCTUS – DALL
ALABINA TENUISCULPTA – CARPENTER
ALETES SQUAMIGERUS – CARPENTER
AMPHISSA VERSICOLOR INCISA – DALL
ATYS CASTA – CARPENTER
BITTIUM ASPERUM – GABB
BITTIUM RUGATUM – CARPENTER
BULLA GOULDIANA – PILSBRY
BULLA PUNCTULATA – A ADAMS
BULLA QUOYI – GRAY
CAECUM CALIFORNICUM – DALL
CAECUM CERBRICINCTUM – CARPENTER
CAECUM MAGNUM – STEARNS
CALLIOSTOMA GEMMULATUM – CARPENTER
CALLIOSTOMA TRICOLOR – GABB
CERITHIDEA CALIFORNIENSE – HALDEMAN
CERITHIOPSIS ANTIFILOSA – BARTSCH
CERITHIOPSIS ARNOLDI – BARTSCH
CERITHIOPSIS COSMIA – BARTSCH
CERITHIOPSIS FOSSILIS – BARTSCH
CERITHIOPSIS HALIA – BARTSCH
CERITHIOPSIS OXYS – BARTSCH
CLAVUS MONTERERENSIS – STEARNS
CREPIDULA ADUNCA – SOWERBY
CREPIDULA EXCAVATA – BRODERIP
CREPIDULA NUMMARIS – GOULD
CREPIDULA ONYX – SOWERBY
CRUCIBULUM SPINOSUM – SOWERBY
CRYPTOCONUS CARPENTERI – GABB (PIECE)
DENTALIUM NEOHEXAGONUM – PILSBRY & SHARP
DIADORA ASPERA – ESCHSCHOLTZ
DIADORA INEQUALIS – SOWERBY
DRILLIA HEMPILLI – STEARNS
DRILLIA INERMIS – HINDS
EPITONIUM TINCTUM – CARPENTER
EPITONIUM INDIANORIUM – CARPENTER
EUNATICA OLDROYDI – DALL
EUPLEURA MURICIFORMIS – BRODERIP
EUPLEURA MURICIFORMIS CURTÀ – ARNOLD
FISSURELLA VOLCANO – REEVES
FOSSERIA BELCHERI – HINDS
HAMINOEA VESICULA – GOULD
ISELICA FENESTRATA – CARPENTER
LACUNA SOLIDULA – CARPENTER
LEUCA PANELLA CALLOMARGINATA – CARPENTER
LIOTIA ACUTICOSTATA – CARPENTER
LITTORINA PLANAXIS – NUTTALL
MANGILLIA LOVERI – ARNOLD
MANGILLIA PAINEI – ARNOLD
MANGILLIA VARIAGATA – CARPENTER
MARGARITA PARCIPICTA – CARPENTER
MARGARITA PARCIPICTA PEDROANA – ARNOLD
MARGINELLA CALIFORNICA – TOMLIN
MARGINELLA SUBTRIGONA – CARPENTER
MEGATEBENNUS BIMACULATUS – DALL
MELAMPUS OLIVACEUS – CARPENTER
MELANELLA MICANS – CARPENTER
MELANELLA OLDROYDI – BARTSCH
METAXIA DIADEMIA – BARTSCH
MITRA IDAE – MELVILL
MITRELLA GAUSAPATA CARINATA – HINDS
MITRELLA SOLIDULA PRAECURSOR – ARNOLD
MONILIOPSIS INCISA – CARPENTER
MUREX FESTIVUS – HINDS
MUREX RHYSSA – DALL
NASSARIUS FOSSATUS – GOULD
NASSARIUS PERPINGUIS – HINDS
NASSARIUS TEGULA – REEVE
ODOSTOMIA AEQUISULCATUS – CARPENTER
ODOSTOMIS FETTELLA – DALL & BARTSCH
ODOSTOMIA GRAMMATOSPERA – DALL & BARTSCH
ODOSTOMIA HIPPOLITENSIS – DALL & BARTSCH
ODOSTOMIA PEDROANA – DALL & BARTSCH
ODOSTOMIA RESINA – DALL & BARTSCH
ODOSTOMIA RICHI – DALL & BARTSCH
ODOSTOMIA RINELLA – BARTSCH
ODOSTOMIA TURRICULA – DALL & BARTSCH
ODOSTOMIA VIRGINALIS – DALL & BARTSCH
OLIVELLA BAETICA – CARPENTER
OLIVELLA BIPLICATA – SOWERBY
OLIVELLA PEDROANA – CONRAD
PALUDESTRINA PROTA – GOULD ?
POLINICES ALTUS – ARNOLD
POLINICES LEWISII – GOULD
POLINICES RECLUSIANA – DESHAYES
PURPURA NUTTALLII – CONRAD
PURPURA NUTTALII ACICULIGER – VALENCIENNES
PYRAMIDELLA ADAMSI – CARPENTER
RETUSA HARPA – DALL
RISSOINA CALIFORNICA – BARTSCH
SEILA MONTEREYENSE – BARTSCH
TEGULA LIGULATA – MENKE
TEREBRA PEDROANA DALL
TEREBRA PEDROANA PHILIPPIANUM – DALL
TRANSATELLA CALIFORNICA – ARNOLD
TRICOLIA COMPTA – GOULD
TRICOLIA SUBSTRIATA – CARPENTER
TRIFORA PEDROANA – DALL
TRIFORA STEPHENSE – BAKER & SPICER
TRITONALIA CIRCUMTEXTA – STEARNS
TRITONALIA KEEPI – ARNOLD
TRITONALIA LURIDA ASPERA – BAIRD
TRITONALIA POULSONI – CARPENTER
TURBONILLA CREBREFILATA – CARPENTER
TURBONILLA LAMINATA – CARPENTER
TURBONILLA PARAMOEA – DALL & BARTSCH
TURBONILLA TENUICULA – GOULD
TURRITELLA COOPERI – CARPENTER

ALSO:

ECHINODERM (SAND DOLLARS) – (DENDRASTER – EXCE EXCENTRICUS)

BRYOZOAS – LICHENOPORA RADIATA
BALANUS TINTINNABULUS (BARNACLE) CALIFORNICUS – PILSBRY

RAY'S STINGERS
CRAB CLAWS

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA - No. 22
April 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or stamps.

All members are urged to attend our next meeting, April 25, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, California.

Minutes of the March Meeting- 1943

The Conchological Club of Southern California met on March 28th, 1943 in the directors room of the Los Angeles County Museum. President Baker called the meeting to order at 2:30 P.M. Twenty members and guests were present. As Mrs. Effie Clark was still unable to be present, Mrs. Chace acted as sec. pro. tem.

A note from Mr. Earl Huffman acknowledged the club's expression of sympathy in the passing of his wife.

The minutes of the February meeting were accepted as published.

The Nomenclature and Publications committee called the attention of those present to a separate from the Proc. of the U.S.N.M. briefed in the club minutes of last month.

John Burch spoke of a Christmas card just received from a shell collector in Malta, having been 6 months on the way.

Dr. Hill reported the death of Dr. Thwing, an old time member of the club and the secretary was instructed to write Mrs. Thwing and express the sympathy of the club.

It was reported that several specimens of Janthina had been taken at Redondo during march. A discussion on Clathrodrillia incisa ophioderma Dall brought out the fact that it frequently comes in on the sand bars, most commonly in mid-winter, but apparently lives just outside the breaker line and is never taken in more than 10 fathoms.

As Mrs, Clark was ill and Dr. Gregg out of town, Dr. Hill then gave the lesson of the afternoon taking as his subject " Conidae" illustrated with many fine specimens. Among the most interesting points were these:

There are about 300 recent species of Conus and 100 fossils going back to the Cretaceous. However, there is only one genus. Adams used a number of sectional names but present practice is to group the various species according to the shape of the shells. All Cones are carnivorous, and some, including C. geographicus, aulicus, and textilis, are poisonous.

Mr. A.M. Strong called attention to the fact that Conus princeps Linnaeus is believed to be the first west coast shell described, but how it reached Linnaeus at that time is not known.

After a discussion of Dr. Hill's talk, and some study of the beautiful display of shells collected by Mrs. Fred Lewis, the club adjourned.

Elsie M. Chace, Sec. pro. tem.

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Mr. and Mrs. J.M. Grech, 59 Sda. Dietro. S. Ubaldesca, Paula, Malta. We were very happy to receive his Christmas card mailed in Malta Oct.1,1942 and received in Redondo Beach, Calif. March 20, 1943. A short excerpt from his letter expresses it well enough. " Perhaps you have thought that I am not living after this Great War, but thanks to God and the British Empire all of our family keep smiling all the time" We sincerely hope that our other friends in Malta have shared as well.

Notes on Cerithidea mazatlanica Carpenter and Cerithidea albonodosa Carpenter

by Earl C. Huffman

Dear Mr. Burch:

I am mailing you a parcel for distribution among the club members of Cerithidea mazatlanica Carpenter and Cerithidea albonodosa Carpenter both collected by me during the April low tides ,1941, at Bahia de Adair, Mexico in the Gulf of California.

A hundred yards from our established camp at Bahia de Adair, Mexico is the beginning of a large colony of the Cerithidea albonodosa Carp. They inhabit only an area of about twenty acres of this immense mud flat. The surface has less than one inch of mud and underlying is a firm silt to quite a depth. Early one morning, hours before collecting would have become really interesting, the tide had receded half a mile from shore and only a shim of water was left over the flat. I decided that right then was the time to collect those little fellows for they seemed as plentiful as the sands of the sea. I gathered a number and returned to camp and by the time I got back to the flat but a few remained on the surface, all had buried themselves in the mud. The average taken was 25 MM length and 10 MM diameter.

One half mile farther up the bay the mud is six inches to a foot in depth and plants resembling succulents flourish. Here you find Cerithidea mazatlanica Carp. They are not as plentiful as C. albonodosa. Quite a wide strip of mud flat separates the two colonies, and where one is found the other is absent. Average 28MM length and 12 MM diameter.

Earl C. Huffman,356 Stanton St., Pasadena, Calif.

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Brigadier General Paul D. Bunker- In the February 1943 minutes your reporter had a note about our member Colonel Paul D. Bunker as we had all known him. The fact that he had been promoted to a General has been called to our attention by a current newspaper item about the dedication of a Service Men's Recreation Quarters in Inglewood, Calif. by a group of Army officers wives whose husbands were on Corregidor when it fell last May 6. Mrs. Paul Bunker, wife of the General headed the group.

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Mr. S.L. Davidson, 33 Mont le Grand Rd., Mt. Eden, Auckland, S.2., New Zealand. A long and cheerful letter from our New Zealand friend has given us occasion for much sober thought. The war found him part way through a B. Sc. course, but a brief quotation will be self explanatory- " but I shall probably be in bed another 12 months yet (have been in 7 months so far). Actually this is not so bad as it sounds once one gets the right mental attitude and it has certainly cured much of my former impatience. I am slowly building up a library in the fields of natural science, chiefly of course N.Z. material, and get a lot of pleasure from my books."

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We wish to express our thanks to the following for their donations to assist in the cost of this small paper : D.S. and E.W. Gifford, 2535 Le Conte Ave., Berkeley, Calif.; Mildred Pattison, 311 N. Gertrude Ave., Redondo Beach, Calif. ; Ralph W. Jackson, Rt. 1, Cambridge, Maryland ; W.H. Weeks, 508 Willoughby Ave., Brooklyn, N.Y.; Edward P. Burch, 1729 James Ave., S., Minneapolis, Minn.; S.G. Skinner, 630 Almond, Long Beach, Calif.

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Dr. Wm. J. Clench, Museum of Comparative Zoology, at Harvard College. We were very happy to have his friendly letter.- " We now have more work and less people to do it than ever before- However, we are getting along. Johnsonia takes up plenty of time- but its response by our friends has been grand beyond belief." He also says: Tucker Abbott is in Guantanamo- he is doing some collecting and seeing a lot of country."

A note from Dr. B.R. Bales advises " Dr. Pilsbry is back in Philadelphia and while he was in Florida, he and Tom McGinty did quite a bit of work on the Ligs and Oxystyla for the last number of his book."

Edward W. Thwing, 1868- 1943

Reverend Thwing was an old time member of the Conchological Club of Southern California and an active conchologist for a great many years. He was the author of several fine works . Among those still in print and available is his " Reprint of Original Descriptions of Achatinella, With Additional Notes" published by the Bernice P. Bishop Museum, Honolulu, T.H., Occasional Papers, Vol. III, No. 1. He lived a very eventful life which is briefly outlined here.

He attended the Adelphi Academy and New York University, 1880-1888. Princeton Theological Seminary 1889-1892. He studied Chinese and Japanese literature 1892-1909. He was Professor of Theology, Natural Philosophy, and Astronomy at the Canton Christian College 1892-1900; Superintendent of Chinese Schools in Hawaii, 1901-1909. He was Oriental Secretary of the International Reform Bureau in Peking, China, 1909-1916; Lecturer in Chinese and Japanese schools 1916-1920; lecturer, writer and bible teacher in California 1920-1930. Also see " Who's Who in America" and the " International Who's Who".

He is survived by his widow, Mrs. E.W. Thwing, 6161 Hillandale Drive, Los Angeles, Calif.

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Mr. Edward P. Burch, 1729 James Ave., S., Minneapolis, Minn. " Several years ago I retired. But I got a job a year ago, at the new Minnesota Museum of Natural Sciences, University of Minnesota, to classify 7500 shells in the museum. Those are world wide shells of several collectors, and up to 70 years old, all or nearly all unclassified. It made a dandy job and will require some years. The shells had not been classified by families, genera, or species,- but simply thrown together in about eight large groups".

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Dr. B.R. Bales has a way of putting things that is hard to beat. See if you don't recall some happy days after reading this. " I surely envy you the chance you have to " commune" with fellow shellers. When we are collecting on the Keys, there is almost always some collector about. Some times there were so many collectors in our cabin (which was always the hang out of the shell gang) that every chair was occupied, the bed was used as a " settin place", and some had to accomodate themselves on the floor. But what a fine time we had- all talking at once and planning the next day's collecting. The book of tides was consulted more frequently than the Bible at a preacher's convention, and what a fine time we had comparing the day's catch. " Then was the 'appy days".

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Pf. F.M. Bayer, Hq. Hq. Sq. 85th Serv. Group, Dale Mabry Field, Florida. We were glad to get track of Ted again. He is well and for the time being serving in his home state. He will receive mail at his home address, Riviera, Florida.

Douglas Charlwood Marsh, 2328 W. 78th Pl., Inglewood, Calif. is probably our very youngest member at this time. He is the son of Mr. and Mrs. William C. Marsh and was born at the Mthodist Hospital this month. Congratulations to all and in particular to the proud grandparents, Mr. and Mrs. J.C. Marsh, P.O. Box 4, Hyde Park, Los Angeles, Calif.

Wm. G. Fargo, has returned from spending the winter at Pass-a-Grille Beach, Fla. and is now at his home, 506 Union St., Jackson, Michigan.

Pvt. Wm. H. Starkey, Finance Detachment, Army Air Field, Long Beach, Calif. We have not had the pleasure of meeting Hartley Starkey but hope to do so at once. We are indebted to our friend Frank Lyman of Lantana Beach, Florida for his address. Mr. Starkey is the grandson of Dr. J.H. Beal, Cocoa, Florida, founder of the Beal-Maltbie Museum of Shells, Winter Park, Florida.

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" Nuculid Bivalves of the Genus Acila" by Dr. Hubert G. Schenck of Stanford Univ. Spedial Papers No. 4 of the Geological Society of America- Published by the society- July 18, 1936. 149 pages-18 plates, many figures and maps. This exhaustive treatise on a puzzling genus has recently been added to the library of your reporter and should be in every conchological library.

No. 22.

LONG BEACH SHELL CLUB

The next meeting of the Long Beach Shell Club will be held May 2,1943 Sunday afternoon at 2:30 P.M.m in the Cabrillo Marine Museum Auditorium with Dr. W.L. Lloyd as host. Mrs. E.M. Chace will be the speaker of the hour. Members will bring their own picnic lunches and eat together on the grounds at the close of the session.

Minutes of the April, 1943 Meeting

The meeting in April of the Long Beach Shell Club was held at 4331 Vermont St Long Beach, the home of Mr. and Mrs. Ralph Borman. Mr. Ralph Borman, our president called the meeting to order and called for any changes or acceptance of the minutes as printed in the Conchological notes printed by John Burch. Every member reported receiving his or her copy and there being no corrections, theu were ordered filed as printed.

The secretary read a letter addressed to the club via Mr. E.P. Chace from Dr. W.L. Lloyd of the Cabrillo Museum at San Pedro, inviting the club to hold a meeting in their auditorium and inspect their collection at leisure. It was unanimously voted to hold the next meeting at the museum after the secretary reported that he had phoned Miss Rogers concerning the place of meeting and finding it was perfectly agreeable with her to do so, as it had been planned to meet with her in May. Plans were made to meet at the usual time but each to bring a lunch and we would eat together on the grounds after our visit with Dr. Lloyd.

The Nomenclature and Publications Committee reported on Johnsonia and Dr. Rehder's reports and notes.

Mrs. Linderman suggested that we suggest to the proper authorities that one of the ships being built and launched here be named for our illustrious member and spondor, Miss Julia Ellen Rogers. It was voted to do so and the secretary was asked to write Mr. Jack Adams.

Dr. Thwing's death was announced and the fact that his shell collection was being handled by Dr. H.R. Hill explained his absence at the meeting.

Ralph Borman, being both host and speaker for the day, was so introduced and brought us a paper on the subject of Pearls, showing much reading and labor of selection in preparing the subject matter. Much of his material was taken from the Scientific American with articles from the pen of A.E. Alexander, Ph. D. Also articles from the Saturday Evening Post and Family Circle, all informative and intensely interesting and caused much discussion and a swapping of knowledge and experiences that Ralph could'nt finish his paper. Nevertheless all voted the session, " tops".

Then to top it all, Mrs. Borman passed around refreshments which were both delightful and refreshing, but then, Mary's a swell cook, anyway.

18 members present, 1 visitor who became a member.

New Members- Miss Grace Stillwell, 337 Cedar Ave., Long Beach
Miss Ruth Eaton, 330 Monrovia, Long Beach.

Respectfully Submitted,
E.P. Baker, Secretary.

* * *

Mrs. W.H. Eshnaur 1862-1943

We have just heard the sad news of the passing of Mrs. Eshnaur at 7 P.M., April 13th at her home in Bellflower, Calif. Mrs. Eshnaur was one of our pioneer members and a more detailed account of her life and work will appear in our next issue. She would have been 81 on April 17.

List of Species Dredged on the Shale Bed off Del Monte, Monterey, Calif. 10-35 Fathoms in August, 1940 by John Q. and Tom Burch.

Brachiopoda

Terebratalia transversa Sowerby
Terebratulina unguicula Carpenter

Amphineura

Acanthochiton avicula Carp.
Callistochiton palmulatus Carp.
Callistochiton palmulatus mirabilis Pils.
Chaetopleura gemmea Carp.
Chaetopleura thamnopora Berry
Ischnochiton cooperi Carp.
Ischnochiton decipiens Carp.
Ischnochiton mertensii Midd.
Ischnochiton radians Carp.
Lepidochitona lineata Wood
Lepidopleurus cancellatus Sowerby
Lepidopleurus nexus Carp.
Oldroydia percrassa Dall
Mopalia ciliata Sowerby
Mopalia imporcata Carp.
Mopalia muscosa Carp.
Mopalia sinuata Carp.
Basiliochiton flectens Carp.
Placiphorella velata Carp.

Gastropoda

Acmaea funiculata Carp.
Acmaea insessa Hinds
Acmaea mitra Eschscholtz
Acteocina culcitella Gould
Retusa harpa Dall
Volvulella cylindrica Carp.
Acteon punctocoelata Carp.
Bursa californica Hinds
Calyptraea fastigiata Gould
Micranellum crebricinctum Carp.
Bittium attenuatum Carp.
Cerithiopsis alcima Bartsch
Cerithiopsis cosmia Bartsch
Seila montereyensis Bartsch
Conus californicus Hinds
Crepidula adunca Sowerby
Crepidula lingulata Gould
Crepidula nummarius perforans Val.
Epitonium acrostephanum Dall
Epitonium belastriatum Carp.
Epitonium berryi Dall
Epitonium chacei Strong
Epitonium columbianum Dall
Epitonium evictum DeBoury
Epitonium regum Dall
Epitonium spongiosum Carp.
Epitonium sawinae Dall
Epitonium tabulatum Dall
Epitonium tinctum Carp.
Fusinus luteopictus Dall
Fusinus monksae Dall
Liadora aspera Eschscholtz
Liadora murina Carp.
Hemitoma bella Gabb
Lucapinella callomarginata (Carp.)Dall
Puncturella cucullata Gould
Iselica fenestrata Carp.
Hipponix antiquatus L.
Hipponix tumens Carp.
Barleeia oldroydi Bartsch
Diala acuta Carp.
Diala marmorea Carp.
Hyalina jewettii Carp.
Hyalina pyriformis Carp.
Hyalina regularis Carp.
Melanella berryi Bartsch
Melanella micans Carp.
Melanella montereyensis Bartsch
Melanella rutila Carp.
Melanella thersites Carp.
Mitra montereyi Berry
Ceratostoma foliatum Martyn
Tritonalia barbarensis Gabb
Tritonalia foveolata Hinds
Tritonalia squamulifera Carp.
Tritonalia interfossa Carp.
Tritonalia interfossa clathrata Dall
Tritonalia lurida Midd.
Tritonalia lurida aspera Baird
Tritonalia lurida munda Carp.
Murex carpenteri Dall
Murex petri Dall
Murex rhyssa Dall
Trophon avalonensis Dall
Trophon triangulatus Carp.
Nassarius cooperi Forbes
Nassarius mendica Gould
Nassarius perpinguis Hinds
Polinices draconis Dall
Polinices lewisii Gould
Olivella biplicata Sowerby
Olivella baetica Carp.
Simnia barbarensis Dall
Odostomia amianta Dall and Bartsch
Odostomia helena Bartsch
Odostomia oldroydi Dall and Bartsch
Odostomia phanea Dall and Bartsch
Turbonilla antestriatus Dall and Bartsch
Turbonilla aragoni Dall and Bartsch
Turbonilla aresta Dall and Bartsch
Turbonilla canfieldi Dall and Bartsch
Turbonilla castanella Dall
Turbonilla cayucaensis Willett
Turbonilla gouldi Dall and Bartsch
Turbonilla halia Dall and Bartsch
Turbonilla lowei Dall and Bartsch
Turbonilla morchi Dall and Bartsch
Turbonilla muricatoides Dall and Bartsch
Turbonilla pentalopa Dall and Bartsch
Turbonilla stylina Carp.
Turbonilla tridentata Carp.

Turbonilla valdezi Dall and Bartsch
Amphissa versicolor Dall
Mitrella auriantiaca Dall
Mitrella carinata Hinds
Mitrella carinata californiana Gaskoin
Mitrella gausapata Gould
Mitrella tuberosa Carp.
Alvania aequisculpta Keep
Alvania compacta Carp.
Alvania purpurea Dall
Rissoina cf newcombei Dall
Willamia peltoides Carp.
Triphora pedroana Bartsch
Erato columbella Menke
Erato vitellina Hinds
Trivia californiana Gray
Calliostoma annulatum Martyn
Calliostoma canaliculatum Martyn
Calliostoma costatum Martyn
Calliostoma gloriosum Dall
Calliostoma splendens Carp.
Calliostoma tricolor Gabb
Halistylus subpoideus Tryon
Margarites salmonea Carp.
Margarites parcipicta Carp.
Turcica caffea Gabb
Astraea inaequalis pacifica Dall
Homolapoma carpenteri Pilsbry
Homolapoma paucicostata Dall
Mangilia arteaga roperi Dall
Mangilia aspera Carp.
Mangilia crassaspera Grant and Gale
Mangilia gracilior Hemphill
Mangilia variegata Carp.
Moniliopsis incisa Carp.
Moniliopsis fancherae Dall
Pseudomelatoma torosa Carp.
Bivonia compacta Carp.
Petaloconchus complicatus Dall
Petaloconchus montereyensis Dall
Spiroglyphus lituellus Morch
Vermiculum anellum Morch

Scaphopoda

Cadulus fusiformis Pilsbry and Sharp
Dentalium neohexagonum Sharp and Pilsbry
Dentalium pretiosum Sowerby

Pelecypoda

Pododesmus macroschismus Deshayes
Clinocardium nuttallii Conrad
Glans minuscula Grant and Gale
Pseudochama granti Strong
Diplodonta orbella Gould
Kellia suborbicularis Montagu
Lima dehiscens Conrad
Lima subauriculata Montagu
Lucina californica Conrad
Lyonsia californica Conrad
Lyonsia inflatum Conrad
Mytilimeria nuttallii Conrad
Mactra falcata Gould
Schizothaerus nuttallii Conrad
Lithophagus plumula Hanley
Modiolus opifex Say
Modiolus fornicatus Carp.
Sphenia pholadidea Dall
Nuculana acuta Conrad
Nuculana taphria Dall
Pandora punctata Conrad
Pecten diegensis Dall
Pecten hastatus Sowerby
Pecten hastatus pugetensis Oldroyd
Pecten latiauritus Conrad
Pecten latiauritus monotimeris Conrad
Pecten multirugosus Gale
Petricola carditoides Conrad
Pholadidea parva Tryon
Pholadidea penita sagitta Stearns
Navea subglobosa Gray
Philobrya setosa Carp.
Gari californica Conrad
Saxicava arctica L.
Saxicava pholadis L.
Cumingia lamellosa Sowerby
Semele incongrua Carp.
Semele pulchra Sowerby
Semele rubropicta Dall
Solen sicarius Gould
Macoma indentata Carp.
Macoma nasuta Conrad
Macoma yoldiformis Carp.
Tellina buttoni Dall
Tellina modesta Carp.
Thracia curta Conrad
Chione undatella Sowerby
Irus lamellifera Conrad
Saxidomus nuttallii Conrad
Transenella tantilla Conrad
Venerupis staminea Conrad
Venus fordi Yates

The Timm's Point Pleistocene Horizon at San Pedro, California

John Q. and Tom Burch

Timm's Point is of particular interest because the series of fossils found are distinctly different from those found in any other local deposit. The fauna is about that of the Puget Sound area, although many of the species may be dredged in deep water off Southern California. For a treatise on the stratigraphy of Timm's Point we refer you to " Catalogue of the Marine Pliocene and Pleistocene Mollusca of California" by U.S. Grant IV and Hoyt Rodney Gale (San Diego Society of Natural History- Memoirs)", " The Paleontology and Stratigraphy of the Marine Pliocene and Pleistocene of San Pedro, Calif." by Ralph Arnold (Calif. Academy of Science- Memoirs), " The Cool Water Timm's Point Pleistocene Horizon at San Pedro, Calif." by Alex Clark (San Diego Society of Natural History- Transactions).

We worked out about two tons of material from Timm's Point. The outcropping is on the face of a cliff and is composed of very hard clay and sand. We found the only method of working it was to chisel off large pieces and soak them in water overnight. This softened the material into a mud that could be washed through the sieves.

We have found several species that have not been recorded fossil insofar as we have been able to determine, and unquestionably there will be some new species described from this formation sooner or later.

The following is a list of the species we collected from this formation. When the name is followed by (AC) it is a species listed by Mr. Alex Clark in his paper that we did not find; and when followed by (GW) it is a species found by Mr. George Willett that we did not find.

Scaphopoda

Cadulus hepburni Dall
Dentalium neohexagonum Pilsbry and Sharp
Dentalium rectius Carp.
Dentalium pretiosum Sowerby

Gastropoda

Acmaea insessa Hinds
Acmaea mitra Eschscholtz
Acmaea mitra tenuisculpta Carp.
Acmaea scabra Gould (GW)
Acteon traski Stearns
Micranellum crebricinctum Carp.
Calyptraea mamillaris Broderip (AC)
Admete couthouyi (Jay(
Alabina californica Dall and Bartsch
Bittium attenuatum Carp.
Bittium catalinense Bartsch
Bittium giganteum Bartsch
Bittium larum Bartsch
Bittium ornatissimum Bartsch
Bittium rugatum Carpenter
Bittium sera Bartsch (AC)
Cerithiopsis antefilosa Bartsch
Cerithiopsis fatua Bartsch
Cerithiopsis necropolitana Bartsch
Seila montereyense Bartsch
Conus californicus Hinds (AC)
Verticumbo charybdis Berry 1940
Crepidula adunca Sowerby
Crepidula excavata Broderip
Crepidula lingulata Gould
Crepidula nummaria Gould
Crepidula princeps Conrad
Ranella oregonensis Redfield
Epitonium acrostephanum Dall
Epitonium belastriatum Carp.
Epitonium catalinae Dall
Epitonium indianorum Carp.
Epitonium sawinae Dall
Epitonium tabulata Dall
Fusinus barbarensis Trask
Fusinus kobelti Dall
Diadora aspera Eschscholtz
Puncturella cucullata Gould
Puncturella cooperi Carpenter
Puncturella delosi Arnold (GW)
Puncturella galeata Gould (GW)
Lacuna porrecta Carpenter
Barleeia oldroydi Bartsch
Diala marmorea Carpenter
Hyalina jewettii Carp.
Hyalina pyriformis Carp.
Hyalina subtrigona Carp.
Melanella prefalcata Bartsch
Mitra idae Melville (AC)
Tritonalia foveolata Hinds
Tritonalia lurida Middendorff
Tritonalia painei Dall
Tritonalia sp.
Trophon avalonensis Dall
Trophon cucymata Dall
Trophon multicostatus Eschscholtz
Trophon orpheus Gould
Trophon orpheus pedroanus Arnold
Trophon orpheus praecursor Arnold

Trophon pacificus Dall
Trophon stuarti E.A. Smith
Trophon triangulatus Carp. (GW)
Nassarius cooperi Forbes
Nassarius mendicus Gould
Nassarius perpinguis Hinds
Natica russa Gould
Natica clausa Brod. & Sowerby (AC)
Polinices lewisii Gould
Polinices reeluziana Deshayes (AC)
Exilia rectirostris Carpenter
Neptunea tabulata Baird
Olivella baetica Carpenter (GW)
Olivella biplicata Sowerby
Olivella pedroana Conrad (AC)
Tricolia compta Gould
Tricolia pulloidea Carp.
Tricolia substriata Carp.
Odostomia helena Bartsch
Odostomia nemo Dall and Bartsch
Odostomia nota Dall and Bartsch
Odostomia farallonensis Dall and Bart. (GW)
Odostomia skidegatensis Bartsch
Odostomia sp.
Odostomia talpa Dall and Bartsch
Odostomia valdezi Dall and Bartsch
Turbonilla acra Dall and Bartsch
Turbonilla aresta Dall and Bartsch
Turbonilla asser Dall and Bartsch
Turbonilla arnoldi Dall and Bartsch
Turbonilla lordi E.A. Smith (GW)
Turbonilla pedroana Dall and Bartsch
Turbonilla regina Dall and Bartsch (GW)
Turbonilla stylina Carpenter
Turbonilla torquata Gould (GW)
Turbonilla tridentata Carpenter
Amphissa reticulata Dall
Mitrella carinata Hinds
Mitrella gouldii Carpenter
Mitrella tuberosa Carpenter
Acteocina culcitella Gould
Acteocina culcitella intermedia Willett
Acteocina culcitella eximia Baird
Retusa harpa Dall
Acteocina inculta Gould
Alvania acutilirata Carp.
Rissoina coronadoensis Bartsch
Cylichna attonsa Carpenter
Triphora sp.
Trivia ritteri Raymond
Calliostoma annulatum Martyn
Calliostoma canaliculatum Martyn
Calliostoma costatum Martyn
Cidarina cidaris (A. Adams)
Margarites lirulata Carp.
Margarites optabilis Carpenter
Margarites pupillus Gould

Solariella peramabilis Carp.
Solariella sp. (GW)
Tegula funebralis A. Adams
Tegula montereyi Kiener (AC)
Turcica caffea Gabb
Truncatella californica Pfeiffer
Astraea inaequalis Martyn
Astraea undosa Wood
Homolapoma bacula Carpenter
Homolapoma carpenteri Pilsbry
Homolapoma sp.
Clathurella conradiana Gabb
Clathurella crystallina Gabb
Borsonia bartschi Arnold
Lora fidicula Gould
Lora reticulata Brown
Lora tabulata Carpenter
Mangilia gracilior Hemphill
Mangilia hexagona Gabb
Mangilia variegata Carpenter
Mangilia oldroydi Arnold (AC)
Moniliopsis incisa Carpenter
Pseudomelatoma morriami Arnold (AC)
Pseudomelatoma moesta Carp. (AC)
Pseudomelatoma torosa Carpenter
Spirotropsis perversa Gabb
Spirotropsis barbarensis Dall
Spirotropsis hooveri Arnold
Spirotropsis rotula Dall
Spirotropsis renaudi Arnold (AC)
Spirotropsis santarosana Dall (AC)
Lora viridula (O. Fabricius)
Turritella cooperi Carpenter
Turritella jewetti Carpenter
* Vitrinella stearnsii Bartsch *
Callistochiton palmulatus Carp. (GW)
Ischnochiton trifidus Carpenter
* Pelecypoda
Pododesmus macroschisma Deshayes
Glycimeris septentrionalis Midd.
Nemocardium centifilosum Carp.
Trachycardium quadragenarium Conrad
Clinocardium nuttallii Conrad
Cardita barbarensis Stearns
Cardita prolongata Carpenter
Cardita ventricosa Gould
Cardita sp.
Glans minuscula Grant and Gale
Pseudochama exogyra Conrad
Cuspidaria pectinata Carpenter
Lucina acutilineata Conrad
Lucina californica Conrad
Lucina tenuisculpta Carpenter
Spisula planulata Conrad
Schizothaerus nuttallii Conrad
Mya truncata Linnaeus
Sphenia sp.

Crenella columbiana Dall
Crenella decussata Montagu
Volsella fornicata Carp.
Nuculana hamata Carpenter
Nuculana minuta (Fabricius)
praecursor Arnold
Nuculana taphria Dall
Yoldia scissurata Dall
Acila castrensis Hinds
Pandora bilirata Conrad
Pandora filosa Carpenter
Pandora grandis Dall (GW)
Hinnites giganteus Gray (AC)
Pecten caurinus Gould
Pecten diegensis Dall
Pecten diegensis stearnsii Dall (AC)
Pecten hastatus hastatus Sowerby (AC)
Pecten hastatus pugetensis Oldroyd
Pecten hericius Gould
Pecten hindsii Carpenter
Pecten jordani Arnold (AC)
Pecten latiauritus Conrad
Pecten vancouverense Whiteaves
Pholadidea ovoidea Gould
Poromya tenuiconcha Dall
Panope (Panomya) ampla Dall
Panope generosa Gould
Saxicava arctica Linnaeus
Semele incongrua Carpenter
Semele pulchra Sowerby
Semele rubropicta Dall
Solen sicarius Gould
Macoma calcarea Whiteaves (AC)
Macoma carlottensis Whiteaves
Macoma inquinata Deshayes (AC)
Macoma nasuta Conrad
Macoma planiuscula Grant and Gale
Tellina buttoni Dall
Tellina carpenteri Dall
Thracia (Cyathodonta) cf pedroana Dall (AC)
Thracia trapezoides Conrad
Axinopsis viridis Dall
Thyasira bisecta Conrad
Thyasira gouldii Philippi
Clementia (Compsomyax) subdiaphana Carp.
Psephidea ovalis Dall
Psephidea lordi Baird
Psephidea cymata Dall
Saxidomus nuttallii Conrad
Verticordia ornata Orbigny

Brachiopoda
Laqueus vancouverensis Davidson
Terebratalia transversa Sowerby

Coral
Caryophylla pedroensis Vaughn
Eunicea sp.

Bryozoa
Celaxia sp.
Tubucellaria punctulata G. & H.
Encrusting bryozoan (several species)
Coraline bryozoan (several species)

Crustacea
Randallia sp.
Cancer sp.
(Other species of crabs)

Echinoderms
Strongylocentrotus franciscanus ((A. Agassiz)
Strongylocentrotus purpuratus Stimpson
Lovenia sp.

Foraminifera (8 large species)
(many small species)

Vertebrata
Bird bones
Mammal's rib bones
Fish vertebrae

Worm tubes

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA* No. 23

May 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printe However, any of our friends interested in receiving them, may, if they wish, send us donations or stamps.

All members are urged to attend our next meeting, May 23, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif., at 2 P.M.

We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the April Meeting- 1943

The Conchological Club of Southern California met in the Directors Room of the Los Angeles Co. Museum at 2 P.M., Sunday, April 25, 1943. The meeting was called to order by the president, Mr. Edward P. Baker. There were 18 members present and one visitor- Mr. Herman W. Miller, 4618 S. Figueroa St., Los Angeles.

No report from the nomenclature committee was forthcoming.

The program committee reported that Dr. W.O. Gregg would give a paper at the next meeting and that Mr. Herman Miller would give a talk on collecting in Central America.

The press committee submitted a report on the mimeographing of the minutes showing a balance on hand of $34.29 in cash and materials on hand.

A letter was received from Mr. and Mrs. J.W. Eshnaur thanking the club for expressions of sympathy in regard to the death of Mrs. Nannie M. Eshnaur who passed away April 13, 1943 and who was interred ar Rose Hills Memorial Park, Whittier, Calif. Motion was made and carried that Mrs. Chace be reimbursed $4 for amount spent for a funeral wreath sent in the name of the club and thanked for her services Motion was also made and carried that Mrs. Chace be requested to send a notice of Mrs. Eshnaur's passing to the Nautilus.

Mr. E.P. Chace then gave a paper using illustrative material on the air-breathing mollusks of the west coast. This was very interesting indeed and contained much information not in the possession of most of those present. It is hoped that this paper will be made a part of the minutes of the next issue. The meeting was then adjourned.

Effie M. Clark- Secretary.

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Mrs. W.H. Eshnaur 1862- 1943

The club has suffered a great loss this month. Funeral services were held on April 16th for Mrs. W.H. Eshnaur, the club's oldest member. We had all known that she was well along in years, and that her health had never been good, but to those of us who had been able to get over to see her, or had cheerful notes from her this spring, the news that she had a paralytic stroke, closely followed by th announcement of her death, came as a sad surprise. As a matter of fact, Mrs. Eshna had seemed unusually well recently and had been out to a meeting of her church group and sewing for soldier hospitals less than two weeks before her death.

Nannie Milton Mock was born near Rockport,Indiana, April 17th, 1862, but was living in Missouri at the time of her marriage to Warren H. Eshnaur, which took place in Kansas City, Mo. in 1884. She and Mr. Eshnaur were already interested in shells before they moved to California in 1898, and after they settled at Termina Island in 1903, they were able to spend a great deal of time on collecting ground which are now but a memory.

(con.)

Mrs. Eshnaur was not a charter member of the Conchological Club of Southern California but joined the club at a very early date. She was inactive for several years because of poor health, but she was always interested and very glad to advise younger collectors younger collectors in the best methods and localities for collecting. In thinking of our conchological kindergarden days, Mr. Chace and I remember gratefully Mrs. Oldroyd's instruction in the studying of shells and the Eshnaur's assistance in collecting.

In 1919 Mr. and Mrs. Eshnaur moved to Bellflower, Calif. and shortly afterward Mrs. Eshnaur revived her membership in the club and Mr. Eshnaur became a member as the membership had ceased to be exclusively feminine. After that time the Eshnaurs made several long trips and added a great deal to their already large collection. But Mr. Eshnaur passed away in 1935 and since that time, Mrs. Eshnaur, realizing that her son was not interested in shells, had sent some invaluable material including the type of Periploma sulcata Dall to the U.S. National Museum, had sold her main collection, and arranged for the distribution of many duplicates to a new generation of collectors.

Mrs. Eshnaur's name has been given to one of our local Vitrinellas, but those who had the priviledge of knowing her will not need the shell to keep her memory fresh.

Elsie M. Chace

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An interesting letter just received from our friend and associate member of the club, Mr. Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. follows:

" Have just read the minutes of the C.C. of S.C. with much interest. Glad to note that some of our foreign friends are still alive and safe. Before the war I had quite a lot of correspondence and exchanged many shells with Mr. J.H. Grech of Malta, and since 1939 I have had a package made up and addressed to him. Now I shall attempt to ship it again providing the post office will permit. I also have had a package ready for Sr. Eusebio Alonzo of Almeria, Spain since 1936, but have finally decided that it is no use trying to send it there.

I have some shells from Sfax, Tunis and two of the strangest looking land shells I ever saw from the oasis of Siwa in Libia. They are Helix (Eremina) zitteli Bttg. This shell is about 4 cm. in diameter and 2 cm. high. It is chalky white and heavily ribbed. It has a tremendous projecting keel reminding one of the rings of Saturn. It is much more heavily keeled than Ashmunella ferrissii Pilsbry or even Helicostyla garibaldiana Semper from P.I.

Last week I went through a fish market and purchased 2 lbs. of rock clams (Venerupis staminea Conrad) and amongst them were a number of unmistakable Venerupis (Ruditapes) philippinarum Adams and Rose. These clams were dug in Kitsap County on Puget Spund and are the first I have ever seen from the state of Washington or the Pacific coast. Some of the specimens even seem to be hybrids of V. staminea X V. philippinarum . The new clam seems to be one of the introduced species from Japan, and if it survives, it should prove to be a welcome addition to our clam beds.

It took me several weeks to get over the effects of pneumonia , but for nearly two months now I have been working hard in the shipyards again.

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John H. Clarke, 1246 S. Hope St., Los Angeles, Calif. Many of us who have the beautiful exchange material in our cabinets sent us by Miss Mavis M. Holloway of Auckland, New Zealand, will be very much interested indeed by the following note from the recent letter of our friend and fellow member. " You asked about my forthcoming marriage. The luckless other part of the arrangement is Miss Mavis M. Holloway of Auckland, N.Z. Right now, however, it looks as if the nuptials would be delayed until after the war. They aren't letting anyone leave N.Z. particularly women and, of course, I cannot get away from here. However, the die is cast."

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We have been advised that one of the recently launched Liberty ships was named the J.M. Gwin in honor of the eminent uncle of our good member Mr. A.M. Strong.

The host of friends of Mrs. Jeanne S. Schwengel, 260 Marmaroneck Road, Scarsdale, N.Y. will be happy to change the name in their address books to read Dr. Jeanne S. Schwengel. The article quoted below will be self explanatory.

" The University of Dayton (Ohio) announced today that, for her notable contribution to science in the field of conchology- the study of land and marine shells- Jeanne S. Schwengel will receive the honorary degree of Doctor of Science at the university's commencement exercises on April 18. Mrs. Schwengel's scientific achievements have been attested to the university by Dr . H.A. Pilsbry of the Academy of Natural Sciences of Philadelphia; Dr. Paul Bartsch of the National Museum, Smithsonian Institution of Washington, D.C. and Dr. Louise M. Perry of Sanibel, Florida, authority on Florida marine shells.

Mrs. Schwengel is a research associate of the Academy of Natural Sciences, where she has studied for the last six years under the direction of Dr. Pilsbry, outstanding authority on mollusks. She is the author of a number of original papers on shells that have appeared in scientific journals.

Although her personal exploratory work has been confined to Florida waters and the subtropics, her private collection of shells includes more than 6,000 species from all over the world. At the New York World's Fair in 1939, she won the Highest Award for Scientific Exhibits for her shell collection in the Florida building.

A feature article on Mrs. Schwengel and her shell collection was published in The Inquirer in November, 1940, shortly after Mrs. Schwengel and her husband, Major General Frank R. Schwengel (retired) came to Scarsdale to live. General Schwengel has recently been made president of Joseph E. Seagram and Sons, Inc.

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Mr. Morris K. Jacobson, 455 Beach 139 St., Rockaway, N.Y. has a fine article " Marine Mollusca of New York City" in the currect Nautilus. He raises a question in his letter which follows and we will appreciate it if some one with the information at hand will advise us.

" I cant begin to tell you how much I enjoy reading your club minutes, in appreciation for which I am inclosing one dollar for your printing fund. It's little enough when I think of you putting in your day at the shipyard and then typing and mimeographing all those sheets. Such effort comes only from true enthusiasm and brings, I hope, its own reward.

I don't suppose Tom remembers it, but some years ago I exchanged some local Phytia myosotis Drapernaud for California's P. setifer Cooper. At that time we wondered why this genus also goes under the name of Alexia (as in Johnson's Atlantic Coast List) and in his letter to me Tom vowed to examine the literature to find out. It's not terribly important, but while thumbing thru some old Nautilus I came across an item in XVII: 8 page 93 (1903) which mentions this topic. In a discussion of Woods list of non-marine mollusks in the Journal of Conchology, the reviewer notes that the name Alexia being preoccupied for a genus of Coleoptera, the name Phytia must now be used. In view of this it is surprising that Johnson used that name as late as 1934. Perhaps there have been subsequent developments. "

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We wish to express our thanks to the following for their generous donations to assist in the cost of this small paper : Dr. Horace Gunthorp, San Diego, Calif., F.R. Bayer, Riviera, Florida, F.R. Aldrich, Balboa, Calif., Mrs. J.M. Hackney, Norfolk, Virginia, Dr. Clinton D. Hubbard, Huntington Park, Calif., Mrs. Mary Corneyy, Los Angeles, Calif., John H. Clarke, Los Angeles, Calif., Mrs. Leona Lindeman, Long Beach, Calif., Mr. W.H. Weeks, Brooklyn, N.Y., Mr. Morris Jacobson, New York, and Dr. Jeanne Schwengel, Scarsdale, N.Y.

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Mr . Charles A. Allen, 920 W. 20th St., Los Angeles is a new club member. Mr. All has a beautiful collection of shells from his former home in Hawaii and some of the finest Cypraea and Conus we have ever seen in any collection.

Mr. Chauncey Pyle of the United States Merchant Marine recently handed us a small collection of shells from the New Hebrides. Some very nice shells were in the lot and naturally we are looking forward to seeing more. For obvious reasons the exact localities are omitted from the following list. I am greatly indebted to Dr. Howard R. Hill of the Los Angeles Museum for assistance in the classification of some of these shells.

Harold Harry Ph M 3/c, Corona Naval Hospital, Corona, Calif. was recently given a small collection from the New Hebrides also. These were a gift from a member of the Unites States Navy. A list of the shells received by Mr. Harry will follow the first list.

Gastropods

Cantharus fumosus Dillwyn
Bulla adansi Menke
Bursa gyrina L.
Cerithium traillii Sowerby
Cerithium tuberculatum L.
Cerithium vertagus L.
Conus coronatus Dillwyn
Conus generalis L.
Conus hebraeus L.
Conus lividus Hwass
Conus minimus Hwass
Conus planorbis Born
Conus textilis L.
Conus vermiculatus Lamarck
Conus vitulinus Hwass
Charonia tritonis L.
Cymatium tuberosum Lamarck
Cypraea arabica L.
Cypraea carneola L.
Cypraea cicercula L.
Cypraea erosa L.
Cypraea lynx L.
Cypraea moneta L.
Cypraea annulus L.
Cypraea tigris L.
Melampus fasciatus Desh.
Pythia scarabaeus L.
Latirus polygonus Gmelin
Melania figurata Hinds
Mitra caffra Lamarck
Mitra luculenta Reeve
Thais hippocastanea Lamarck
Nassa albescens Dunker
Nassa arcularia L.
Nassa concinna Powis
Nassa globosa Q. & G.
Nassa monile Kiener
Nassa muricata Brug.
Nassa picta Dunker
Natica marochiensis Gmelin
Natica melanostoma Lamarck
Polinices mamilla Lamarck
Nerita histrio L.
Nerita polita L.
Nerita reticulata Karsten
Nerita undata L.
Oliva elegans Lamarck
Oliva erythrostoma Angas
Oliva erythrostoma saturata Dautzenberg
Pterocera lambis L.
Pterocera scorpio L.
Strombus dentatus L.
Strombus floridus Lamarck
Strombus gibberulus L.
Strombus samar Chem.
Terebra caerulescens Lamarck
Terebra cingulifera Lamarck
Malea pomum L.
Turbo chrysostomus L.
Turbo petholatus L.
Turris garnonsii Reeve
Turris sp.

Pelecypoda

Arca antiquata L.
Arca helblingii Brug.
Cardita variegata Brug.
Cardium mindanense Reeve
Chama iostoma Conrad
Mesodesma glabrata Deshayes
Pedalion spathulatum Reeve
Asaphis deflorata L.
Gari amethystus Reeve
Semele sponsa A. Adams
Spondylus lamarckii Chenu
Tellina discus Hanley
Hippopus maculatus Lamarck
Tridacna cumingii Reeve
Gafrarium pectinata L.
Tapes violescens Deshayes
Venus puerpera L.

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Mr. Harry's List

Polinices albumin Lamarck
Cypraea arabica L.
Cypraea lynx L.
Conus generalis L.
Conus pulicarius Hwass
Conus littoralis L.
Strombus minimus L.
Strombus auris-midae L.
Strombus floridus Lam.
Pterocera scorpio L.
Drupa horrida Lam.
Drupa ricinus L.
Patella stellaeformis Reeve
Terebra strigillata L.
Trochus alboliscus
Trochus maculatus Lam.
Nerita costata Chem.

Marine Air Breathers and Their Neighbors

by E.P. Chace

Dr. Dall in Bull. 112 under the order Pulmonata lists the following families and genera.

Family Ellobiidae	Genus Phytia Pedipes Melampus
Family Gadiniidae	Genus Gadinia
Family Siphonariidae	Genus Siphonaria Williamia

These are all supposed to be air breathers and top of the tide species.

Genus Phytia Gray 1821

We have Phytia setifer Cooper 1866. It ranges from Humboldt Bay to San Pedro and may be in San Diego Bay, but I have not taken it there nor does Mr. Roy Morrison or Miss Edna Wilson list it from there. Many years ago I collected Phytia and Melampus on the marsh that is now the California Shipyard. Associated with them was Cerithidea californica.

Phytia setifer is a small shell, 5 to 6 mm in length, by about 2 mm in diam. The aperture is about one third the length of the shell and in fresh specimens there is a row of hairy spines at the shoulder of the body whorl. These are often lost by the time the specimen is ready for the cabinet. The animal has a lung sac according to most authors.

Genus Melampus, Montfort 1810

The Olive Ear Shell. I think that we all know this common marsh dweller. It also has a lung or air sac. The range given in Bull. 112 is Monterey to Mazatlan.

Genus Pedipes, Scopoli 1777

This small brown shell (sometimes rather pink when alive) has an entirely different habitat. It lives rather deep in the rubble rock at high tide line. The first ones that Mrs. Chace and I collected were empty shells that we took from the anemonies at Bird Rock near La Jolla. Several years later we dug them out of the rubble rock pile at Malaga Cove at about the high water line. They live at least the third layer of rocks down, and I think that we dug down almost two feet to get them. On one of our trips to Punta Banda, near Ensenada,Mexico, we found them living on the dirt under the top row of rocks at the top of the rubble beach. We are supposed to have two Pedipes. P. unisulcatus Cooper and P. liratus Binney.

Genus Truncatella (Leach,1818) Risso 1826

Associated with the Pedipes is another small pink shell, Truncatella californica Pfeiffer. This has a whole family to itself and is placed in the order Ctenobranchiata and the suborder Nucleobranchiata. We are supposed to have two species, T. californica Pfeiffer 1857 and T. stimpsoni Stearns 1872. The first is fairly common and lives from Santa Barbara south to San Diego and San Martin Id. Lower Calif. T. stimpsoni is listed from Catalina Id. to Magdalena Bay.

Genus Gadinia Gray 1842

We have Gadinia reticulata Sowerby 1835. There is an article in the Am. Journ. of Conch. Vol. 6 by Dr. Dall giving a great deal of information as to the anatomy of this animal. It has a lung or air sac. Dr. Dall lists seven synonyms of Gadinia among them one that was used by Cooper in the Proc. Calif. Acad. of Sci. 1865- Rowellia radiata Cooper was described from a young specimen of Gadinia reticulata. The genotype is G. afra Gray which as its name indicates comes from the west coast of Africa. The shell assumes many forms, some very flat and others quite a high cone like Acmaea mitra. The shell is normally white and has both radiate ribs and concentric sculpture. Usually however the shell is badly eroded and covered with a thin coat of green algae.

Genus Siphonaria Sowerby 1824

The Siphonarias have a lung or lung cavity with a lihing of branchiae. This genus is divided into two groups the shells of which are quite different. First Siphonaria thersites of the Alaskan region is a small brown shell more horny than calcarious. This group has members in other regions too. Siphonaria branneri Stearns is a form that may be found locally. At least the type came from Santa Barbara and there is a record of one having been taken at Laguna. The shell is somewhat like S. thersites but is marked with " fine whitish radiating ribs which crenulate the margin". I have never seen one.

Second- the southern Siphonarias. S. gigas from Panama is a big husky shell with strong ribs. I have a set which shows the characters very well. S. characteristica Rve. is even larger but with finer ribs. S. lecanium Philippi is smaller and flatter but still a heavy shell in comparison with our Alaskan form. Maxwell Smith says that the metropolis of this group is South Africa.

In the Cambridge Natural History Vol. III, A.H. Cooke says of Siphonaria " Branchia as well as pulmonary sac. Gadinia no branchia". " These genera hitherto placed among the Pulmonata have recently been shown to be modified Opisthobranchiata.

Genus Williamia, Monterosato 1884

Shell small thin, apex recurved and more or less acutely pointed. Surface smooth, without sculpture. Siphonal groove not visable from the outside, without emargination. The hooked recurved apex separates this genus from Siphonaria(Oldr.) Range- California to the Gulf of California. There are two species listed and described- W. peltoides Carp. 1864. Mrs. Oldroyd gives the original Latin description and no translation. The description is short but apparently sufficient and ends with the measurements, Long. .14, Lat. ,11; Alt..05 poll. Type locality is Cape San Lucas. Range- Monterey to the Gulf of California. Many of Carpenter's small shells came from the washings of larger shells such as Pinna,Haliotis, Spondylus etc. and that may well have been the source of this tiny Williamia. Dr. Dall in Bull. 112 gives a figure or rather two figures of this species.

Plate 15 fig. 10 W. peltoides Carp. type long. 10mm
Plate 15 " 12 " " alt. 6.5 mm.

This does not correspond with what he said in 1871 in an article in the Am. Journ. of Conch. (Remarks on the anatomy of Siphonaria with the Des. of New. Sp.) in which he says " Nacella peltoides Carp. is exceedingly minute--- the type is so young that it is almost colorless but the mark of the siphon is perceptible with a magnifier--". In this same article he places his MSS. name Nacella vernalis in the synonomy of S. peltoides Carp. The genus Williamia was not set up until 1884. In this article Dr. Dall redescribed Siphonaria peltoides and apparently selected another type- the one figured in Bull. 112 as a good sp. Also he included W. vernalis in the list as published in Bull. 112 as a good sp. Grant and Gale state " It seems probable that there is but one Williamia on this coast. The tall, somewhat hooked apex form is probably a situs form."

Another high tide collecting spot is under the winrows of zostera around the edges of the bays. These winrows are sometimes dry on top but damp and decaying underneath. I remember collecting in one such spot at Mugu Bay, not far from the fishing camp. I found a thriving colony of the small shells of the Diala-Syncera-Barleeia group. These need careful study with a good glass.

Another ' top of the tide' group is the Littorines. These small shells live at or just above the high tide line. In the marshes they live on the stems of the course marsh grass and on any other solid object and on the other coasts on the rocks, many above the tide line but where they are washed with the spray. We have two species here, L. planaxis, usually well rounded with an excavated columella. L. scutulata usually smaller, taller and frequently with a bit of purple in the aperture. They like rough rocks and on the big breakwaters all drill holes are apt to be filled with Littorines. There is a record of Littorina irrorata , a Florida species having lived out of water for 4 months- probably in a condition equivalent to hibernation in higher animals.

More or less in the way of discussion your reporter, John Q. Burch, will add a few comments on the so called air breathers following an interesting letter dealing with Truncatella recently received from Mr. W.J. Bower, 334 Third St., So., St. Petersburg, Florida.

" At long last the tiny shells are in the mail and on the way to you. I have sent you- Rissoina chesnelli Michaud, Truncatella bilabiata Pfeiffer, and Truncatella caribaeensis Sowerby.

Some of the latter may be the variety pulchella, but I am not sure- can't distinguish between them.

Many of the Truncatellas, or looping snails, were alive when taken, and it was easily seen how they got their common name. Under a glass, one could see the mollusk come out of the shell with two small telescopic horns and a round sucker like mouth. They would attach this sucker to something and then pull the shell up.

Dan Emery tells me that when the Truncatellas are immature they have a few more whorls, and quite a pointed spire. When mature they drop some whorls and become truncated. I have included some of these juveniles which may be either or both of the species.

Of course, I can't get gas to drive north, I don't like the delays and discomforts of bus or train travel these days, and my sister with whom I lived at Bronxville, has rented her house for the summer, so I am going to stay here for the summer. This way I am sure of being here for next winter." W.J. Bower

The habit of Truncatella losing the tip of the spire when mature, as mentioned by Mr. Bower, is true of our west coast species also. Our experience has been that Truncatella stimpsoni Stearns is the more common form with numerous local collecting localities- Catalina Island (Avalon), Santa Monica, Malaga Cove, Pt. Vicente, Newport Bay etc. Truncatella californica Pfeiffer has been comparatively rare with our only records showing Newport Bay, Punta Banda de Todos Santos Bay (Lower Calif.), and from the Pleistocene of Timm's Pt., San Pedro.

Siphonaria branneri Stearns has been dredged off San Pedro, Calif. by Mr. George Willett of the Los Angeles Museum. Tom and John Q. Burch dredged it off Redondo Beach in 25 ftms. gravel bottom. In our opinion it is a deep water form.

Williamia is a puzzling genus to find in this group. Perhaps some further study of the anatomy will show something of interest. The experience of all deep water dredging along this coast has shown this genus to be rather abundant down to 30 fathoms or more, and Tom and John Q. Burch dredged it from the rather amazing depth of 75 fathoms off Redondo Beach. Mr. George Willett has dredged it extensively. Our experience has been that Williamia peltoides Carpenter and Williamia vernalis Dall are seldom taken together. We found W. vernalis the prevalent form on the shale bed off Monterey and W. peltoides Carpenter more common off Redondo Beach. Therefore, it is our opinion that they are both good species.

Syncera translucens Carpenter was taken in great numbers along with the Phytia setifer Cooper from the marshes of Terminal Island. We also found it associated with the Truncatella and Pedipes at Malaga Cove, very common along the edges of the sloughs at Mugu etc.

What about Trimusculus reticulatus (Sowerby) ??? Dr. Harald A. Rehder of the U.S.N.M. published a paper " On the Molluscan Genus Trimusculus Schmidt 1818, with Notes on Some Mediterranean and West African Siphonarias "- Proc. of the Biological Society of Washington, Vol. 53, pp 67-70, June 28, 1940. In his paper Dr. Rehder gives the synonomy of this genus as follows:
Trimusculus Schmidt 1818- Gadinia Gray 1824- Clypeus Scacchi 1833- Mouretia Sowerby 1835- Rowellia ' Cooper' Carpenter 1864.

Your reporter will be happy to receive any further observations on this group.

THE LONG BEACH SHELL CLUB - May 1943

At the gracious invitation of Dr. W.L. Lloyd, the Long Beach Shell Club met at the Cabrillo Marine Museum, where the breakwater meets the strand, on Sunday afternoon, May 2nd, at 2:30 o'clock. Several first time visitors were present, as well as some who had been shell collectors and members of the club for years but transportation problems had kept them from being present at meetings. We were glad to see all of them and talk shop. Alltold there were 36 present, 22 members, 2 new members , and 12 visitors.

The minutes of the former meeting having been mailed to members, and there being no corrections or additions, they were ordered filed as printed. One of the first matters of business attended to was the renewal of the Nautilus subscription for 43-44. The secretary read a letter from one of our members, now living in Seward, Alaska, stating she was ' so sorry' but collecting was out for the duration, but that food was plentiful and 'specially meat.

The Committee on Nomenclature and Publications reported some bulletins received and the news that Mrs. Jeanne Schwengel was now a Doctor, having received her degree of Sc. D. from Dayton University for her work in Conchology.

The matter of the next meeting at Dr. Hill's and the picnic lunch was discussed. Mrs. Hill, Mrs. Chace, Mrs. Lindormann and Mrs. Borman were named as a committee to attend to the lunch. Dr. Hill announced that he would be at the Los Angeles Museum from 1:00- 2:30 P.M. to show the Lewis collection to any who might wish to see them, and that the meeting would be called for 2:45 P.M.

So the JUNE MEETING TO BE HELD SUNDAY AFTERNOON, JUNE 6- will be held at 4262 ANGELES VISTA BLVD. Two blocks west of Crenshaw and one long block north of Vernon Ave. in the City of Los Angeles.

Dr. Howard R. Hill is scheduled to talk on "Tritons".

Mrs. E.P. Chace was introduced by Dr. Hill as the speaker of the day, and she announced her subject as one suggested by a member new in the collectinn of live shells- " Shells to be found in sandy bays and shore tide levels". , or something to that effect. Anyway she had scads of illustrative material and inexhaustable funds of information as to where and when said dwellers of the sand could be found. This highly informative and instructive discourse called forth such other information and discussion from other experienced collectors, insomuch that at times several 'discussions' were going on at the same time ' soto voice', in the rear of the room, until the speaker was forced to ask them to speak up so all could join in the experiences or desist until the meeting was out. Ha, Ha- Nothing like a good old 'sperience meeting' among old timers.

At the close of the meeting, whilst tables and chairs were arranged, a goodly number took advantage of the opportunity to visit the museum and exhibitions downstairs with Dr. Lloyd, where with new cases and additional room the display shows up to wonderful proportions. Dr. Lloydmade the wonderful offer to the club of the Museum for a permanent headquarters, if we should see our way clear to do so at this time. This will come up for careful consideration at our next meeting. Thanks- Dr.

A picnic lunch was enjoyed in the auditorium and on the balcony, overlooking the Pacific, where bathers frolicked in the surf and enjoyed the sandy beach. It was a gala day for all present.

Respectfully submitted- E.P. Baker, Secretary.

Mr. O.H. McLemore, 1062 Oliver, San Pedro, Calif. was elected a member of the Long Beach Shell Club. Mc has been a member of the Conchological Club of Southern California for many years.

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We were very happy to have as our guest one day recently Pvt. Homer V. Geib of Florida. He is now serving with the 539th Bomb. Squad., Army Air Base, Pocatello Idaho but is enjoying a furlough in Southern California.

Mr. F.R. Aldrich, Aldrich Museum, Balboa, Calif. How familiar this extract from his recent letter sounds " The building up of the collection is very much at a minimum for all of my foreign correspondence has ceased across both oceans. We formerly carried a heavy foreign exchange. Now we have none."

Notes from Newport Bay, Calif., April 22-25, 1943

by Beatrice L. and Tom Burch

The junior Burches went down to Newport Bay over the Easter holidays to do some experimental work on the attachment of Ciona intestinalis on submerged surfaces for TB's MS thesis. They stayed at the Bay Shore Camp (and boat landing). Incidentally, this is an excellent place for shell collectors to stay. We had a three room bungalow with bath. Fine facilities were there for camping as well.

Friday morning at 8 AM they embarked hopefully in a skiff to find Ciona, caprellids, mollusks, and algae. TB rowed as far as the first sand bar and stopped. After a preliminary survey the navigator got out and pulled skiff and BL over the hump and proceeded west examining every few float landings for Ciona, but only found sponge, Pectens and Tubularia. The sponges occured everywhere, Pecten latiauritus was fairly common on most floats, but at a few places it was the predominant fouling animal as was Tubularia (hydroid) in others. The pectens were about ½ inch in diameter and were attached by their byssus to algae, sponges, dock etc.

BL was delighted when TB ran aground again while attempting to take a short cut on the landward side of a buoy. The less obvious reason for her joy was apparent on examining the eel grass at the point. Great numbers of Caprellids were found. By way of explanation let it be mentioned that Caprellids or skeleton shrimps are dear to her heart for some weird reason. Grunting northward (or should I say rowing) and examining every float the explorers began to get discouraged when TB found one small specimen and yelled " Whoopee". Three Union Minute Men appeared on the dock to sell us some gasoline. When they saw that TB was the motor and didn't need gasoline they retreated to the shelter of their oil cans. After a great deal of searching the embryo scientists managed to find 7 immature specimens and continued the voyage. About a quarter mile further one of the members of the expedition noticed what appeared to be a plank at the high tide line. For some still unknown reason the rower changed his course to investigate and discovered that it was a large paddle board. Since no one was anywhere around and it looked as though it had washed ashore during the night, the navigators quoted the law of the sea in regard to derelicts, claimed it for their own and christened it " Sagitta" which is the generic name of a chaetognath or arrow worm. (BL is working on the anatomy of these animals). After a brief consultation the captain decided to act as prize crew and paddle the new craft home while the mate returned in the skiff. Everything was O.K. until some idiots in a motor boat decided to try and wash the prize crew off by speeding as close as possible to the paddle board. After seven attempts which were unsuccessful they left leaving the mate in a fine state of jitters with waves in all directions and seemingly a paddle board on every wave. The captain decided to tow the " Sagitta" the rest of the way (much to the relief of the mate).

Unfortunately all of the Ciona were too immature to be of any value for TB's experiments, so we planned to tow to Balboa with a plankton net to try our luck there. The first haul was too near the surface and contained no chaetognaths. The second was unfortunately on the bottom which incidentally is very hard on senile plankton nets. The mate suggests that if the depth of shallow water is unknown , from now on to pay out less rope. No report has been received to date from JQ Burch as to the molluscan fauna from the bucket of channel mud which was brought aboard.

Innumerable floats and boats were examined for Ciona, but none were found. It is surprising how the Bay fauna changed in one year. Still undiscouraged the intrepid pair decided to start at dawn the next day and look once more. At dawn (or a few hours later) when the noisy birds started eating instead of singing and the fog came in, the Ciona hunters set forth once again. The first stop of interest was at the Croft and Neville Co.'s docks where TB went ashore and asked if any floats had been put out about the first of the year. (Note- it takes about four months after submergence for the Ciona to appear and reach sexual maturity). No float had been put in since the fall so all the Ciona would be dead. When the manager understood the reason for the interest in his floats, he had some of his men go out and turn over a float with a crane. (They were going to do so anyway). The bottom of the float was practically covered with Mytilus edulis among which were oysters, Pecten latiauritus, Saxicava arctica, Modiolus capax, Balanus (acorn barnacle), hydroids, bryozoa, crabs, small fish, but no Ciona. The manager said that some " guy " from Balboa Island obtained a bucket full of what the writers surmise was Pteria from the bottom of one of the floats. He has one at home " as big as your hand" which he uses for an ash tray.

By the time the explorers had rowed around Lido Island and finally had returned to their camp, Ciona no longer worried them and they gave up the search.

After lunch and a nap on the beach the upper part of Newport Bay was charted for exploration. TB took the skiff and BL started out on the " Sagitta" on her own power, but soon had to be taken in tow. The size of upper Newport Bay is surprising. When the explorers reached what was thought to be the end, they found that it branched to both the right and left and were startled to find that the channel was being dredged. Investigation disclosed that some private concern was sifting the dredgings through an enormous rotating sieve, collecting shells by the truck load and carrying them to a nearby corrugated iron building. These men were aiding national defense by helping chickens lay better eggs. The shells were first fired to dry and convert partly to lime and then were ground up and sacked for chicken food.

TB discovered that a paddle board is an excellent device for stalking birds in a slough and was able to glide within 25 feet of a loon and Great Blue Heron. On the way back to Bay Shore BL again had cause for amusement when her husband took another short cut and had to get out and pull the skiff over another sand bar. After the channel was reached , BL was horrified to remember the abundance of sting-rays on all of the low bars in the Bay. TB prudently had not reminded her of them when in the water.

During the three days the low tides were very good and all occured during daylight, however, since the primary purpose of the trip had been for Ciona, no collecting was done on the mud flats until Sunday. Apparently this part of the bay has not recovered even yet from the terrific rains of several years ago when so much silt was washed into the bay killing most of the molluscs. No Cardiums were found while before the rains, C. substriatum was abundant and C. quadragenarium was not too rare. Mactra californica is making a come back now. The only common shells were Tagelus californicus, Chione undatella, and C. fluctifraga. X Zirphaea pilsbryi was common in a few places. It was hoped to find some Macoma nasuta in order to observe their activities and soon the Burches changed their previous notions that it is a common species. After about an hour's search they discovered a small indentation in the bank at the high tide line where the black mud was soft and gooey that even the surrounding marsh grass could not grow in it and TB sank above his ankles. The mud was not sulphurous , but was exceedingly sticky. Careful digging with shovel and hands disclosed that the Macomas were about 4 to 6 inches below the surface of the mud with the beaks uppermost and the long axis in a horizontal position. A number of specimens were arranged around each Callianassa burrow in such a way that it appeared that their siphons were extended into the hole as does Cryptomya californica. The writers are not certain if this site in relation to Calianassa is universal with Macoma nasuta. It is definitely not so with other common Macomas. The only other shells found of interest were Tellina carpenteri, Solen rosaceus, Barnea pacifica, and Semele decisa.

After rescuing feet and ankles from the mud, suggesting that snow shoes would work best, the Burch cruise was declared over and the crew gathered the tons of equipment together with the " Sagitta", mud, Macomas, Callianassa, Caprellids, and seaweed and returned to Los Angeles full of satisfaction with our brawny muscles which carried the expedition over a distance much greater than the calculated 14 mile rowing spree.

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Mrs. Ralph Hooper, Seward, Alaska- (Dorothy Banner before her marriage). We were pleased to hear from her acknowledging receipt of our minutes etc. Mrs. Hooper was a long time member of the Long Beach Shell Club and an active collector.

We were indeed happy to receive the following letter which was only a little over three months en route:-

24 Melita St.,
Sliema, Malta G.C.
14.2.43

Dear Friend Burch:

Just a line which I know will come as a surprise to you, but enough to show you that I am alive and kicking and that I have not forgotten you.

Well after all America is in the war. I always thought she would join in, and I do hope the war has not brought you any troubles. As for myself I cannot complain much but, God willing, we will soon have victory and we will be able to swap experiences etc. In the meantime my hobby is lying quiet. Well Cheerio / old friend and Good Luck to you and yours. Yours sincerely,

(Please note new address) W.E. Griffith

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Mrs. Ida Worthy, Patumahoe, Auckland, New Zealand. We have a long letter from Mrs. Worthy dated March 22, and regret very much to report the critical illness of Mr. Worthy.

John M. Dowdle, 2304 Seventh St., Los Angeles, Calif. Jack phoned us at the museum at the time of our last meeting to express his regrets at not being able to meet with us. We hope to see him soon.

Cpl. Wm. H. Starkey, Army Finance School, Wake Forest College, Wake Forest , North Carolina. I fear that the members of the U.S. Army simply move around too fast to accumulate much of a shell collection even if they had the time to do it. " I left Long Beach on April 10th for a 3 months course here at Wake Forest- and I 'm not at all sure to return to Long Beach. I hope to, however, and will look you up IF and when I return."

We were sorry to learn from Mr. Starkey's letter that Dr. Beal is in the Pensacola Hospital and far from well.

H. Carroll McGowan, c/o Baldy View Sanitarium, 701 Hill Drive, San Gabriel, Calif. Mr. McGowan sends his regards to all, says he is greatly improved and hopes to again join us in our activities.

We are in receipt of the May 1943 Bulletin of the San Diego Natural History Museum and are pleased to note that they are still functioning with the many affiliated clubs even more active than usual with their weekly nature walks and excursions. The San Diego Society of Natural History is definitely carrying on even though for the ' duration ' confined to one wing of their building. All of the publications of the society are promptly shipped on order and other business taken care of as usual.

The fine Scientific Library is now housed at the San Diego State College and available to students. This is particularly welcome news.

The current Bulletin announces that the large and valuable collection of shells accumulated by the late Captain J.F. Anderson and his wife has been donated to the museum. The collection numbers over 50,000 specimens and contains many rare and choice specimens from all over the world.

The Museum staff, with the research collections are established on the ground floor of their building and will continue their work for scientific advancement.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA- No. 24
June 1943

The minutes of the Conchological Club of Southern California are not open to subscription, and are occasionally mimeographed or printed. However, any of our friends interested in receiving them, may, if they wish, send us donations or stamps.

All members are urged to attend our next meeting, June 27, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your reporter,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the May Meeting- 1943

The Conchological Club of Southern California met in the Director's Room of the Los Angeles County Museum at 2:00 P.M., May 23, 1943. The meeting was called to order by Pres. B.P. Baker. There were 17 members present and one visitor, Bill Reeder, 4725 Brynhurst Ave., Los Angeles, who asked to be allowed to become a member.

It was moved and carried that the time of meeting be changed from 2:00 P.M. to 2:30 P.M.

There being no reports from standing committees the program was taken up.

The first talk was given by Professor H.W. Miller, whose present address is 4618 S. Figueroa St., His subject was " Shell Collecting in Costa Rica" and it was a treat indeed. Aside from the fact that he was describing the finding of shells so beautiful and unusual that they can usually be gotten only from dealers, and often at a considerable price, this graphic description and quiet wit made listening to his tale of the evolution of a shell collector a rare treat.

He told of his progress from a one-look man to one who made long journeys to difficult collecting in two oceans. The thoughtful questions he asked himself and others as to the " why" of some of his findings and the ingenuity he employed in getting some of his finds to relax in order that their shells be kept intact made excellent listening.

His tale of the difficult trip made with fishermen in search of turtle eggs and the wonderful beaches he found was like a description of a conchologist's dream of what he might hope to see in Paradise, but hardly to be found this side of it.

The second talk by Dr. W.O. Gregg was not a talk on the subject of beautiful shells but as he said , " of mollusks that never had any shells"- slugs. Many persons have shrugged at what they called " those nasty looking things" but the Dr's description, if it did not transform them into beauties, at least made them interesting indeed.

He knows his slugs, introduced them in person, and made us wonder why we had not been using our eyes to find out more about these very interesting animals.

There was so much to be said about them that time did not suffice to cover the subject and it will be continued at the next club meeting.

The meeting was then adjourned.

Effie M. Clark- Secretary.

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Dr. Bernardo Utset Macia, well known conchologist of Cuba, has writen us that he is now Assistant Resident in Surgery at the Bronx Hospital, Fulton Ave. & 169 St., Bronx, New York.

Shell Collection for Sale

Mrs. W.L. Brown, widow of Mr. Walter L. Brown, a member of the Conchological Club for many years up to the time of his death, is offering this very fine collection for sale. The shells are in glass covered boxes and may be purchased by the box as desired. The collection is world wide and contains many very rare and beautiful specimens.

The shells are in the cabinets at this time in the Brown residence, 66 16th Court, Hermosa Beach, Calif. It is suggested that those interested in looking over this collection telephone Mrs. Brown at Redondo 3441 for an appointment.

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The Los Angeles Museum is fortunate to have for reference and display the large marine collections of Capt. and Mrs. Fred Lewis, formerly of Balboa, Calif. and recently moved to Puget Sound. The material is loaned for a period of ten years and represents collections made during the past six years by the yacht Stranger, owned and operated by Capt. Lewis. Most of the specimens were obtained by dredging in the following localities:- Aleutian Ids., Alaska, Puget Sound, Hawaiian Islands, Fiji Ids., Society Ids., Marquesas Ids., Gilbert Ids., Ellice Ids., Galapagos Ids., West Indies and the tropical Pacific from Mexico to Ecuador./

The three show cabinets with the hand carved doors, done by Mrs. Lewis, contain some of the interesting examples of marine animals selected from the collection. These cabinets have mirrored backgrounds and glass shelves and the frame work is of Australian gum. They are also equipped with neon lights. The cabinets have been placed in the lecture room on the third floor of the museum which is used as a meeting place by the Conchological Club of Southern Calif.

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In addition to the above note about the most recent aquisition of the Los Angeles County Museum, the following facts may be of interest.

Dr. Howard R. Hill and Mr. George Willett are the recognized authorities on conchology.

The museum contains 29 types of west coast marine shells and 23 types of west coast land shells.

Among others the museum contains the following large reference collections: The George Willett Collection of dredged west Mexican mollusks; Dr. R.H. Tremper collection of west coast shells ; J.M. Lane collection of world wide shells; Mrs. Burton Williamson collection etc.

The reference collections also include a collection of west coast mollusks in preservative (alcohol).

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We hear that our fellow member Kenneth L. Althaus is now on the high seas serving with the United States Merchant Marine. Kenneth is one of the best field collectors we have ever known and if he is offered an opportunity it is certain that he will return with material worth while.

Homer V. Geib, Airmen's Club, 3300 India St., San Diego, Calif. has just written us that he is now associated with Consolidated Aircraft and expects to join us in our shell activities.

Morris E. Caruthers, 120 E. Chestnut St., Glendale, Calif. We were never happier than to receive the word that like Mark Twain the " reports of his death were greatly exagerated."

Mr. R.E. Galbreath, R1, Box 48, Newhall, Calif. We reluctantly decline our friend's cordial invitation to visit his district and go collecting but we have an " A" book.

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" Notes on Some Barnacles From the Gulf of California" by Dora Priaulx Henry, from the Proc. U.S.N.M., Vol. 93, No. 3166. This new well illustrated paper should be in the hands of all students of this group.

J. Wyatt Durham

The Museum of Paleontology, University of California, Berkeley, Calif., now in charge of Dr. Bruce L. Clark, Professor of Paleontology, is one of the great institutions of our coast. The museum contains one of the largest if not the largest collection of Recent mollusca on the west coast. The collection contains a great many thousand species. Inasmuch as the collection was built up for study and not for display, it contains a large number of individual specimens of the same species from many localities. The collection has been built up entirely for research. While there is some very fine land and fresh water material, this portion of the collection is not comparable to the other groups. In the Museum of Paleontology a very large portion of the invertebrate collection is fossil. While there are collections from all of the various periods , the research work has been done almost entirely upon the Cenozoic. These collections are by far the largest in the west.

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The Natural History Museum, Balboa Park, San Diego, Calif. was founded and is operated by the San Diego Society of Natural History (incorporated 1874) Dr. Clinton G. Abbott is the director of the museum and Miss Viola Bristol is the curator of mollusks.

The shell collection is one of the largest in the country, probably among the first ten, and perhaps better. Of recent shells the museum has some 350,000 specimens. This figure might be roughly subdivided as follows:

H.N. Lowe Collection, received by bequest in 1936	150,000 specimens
Dr. Fred Baker Collection, received by bequest in 1938	50,000 "
Capt. J.F. Anderson Collection, received by deposit in 1920, and by gift of the owner (Mrs. H.M. Wegeforth) in 1943	50,000 "
Other sources, including Henry Hemphill, C.R. Orcutt, E.A. Hornbeck, Mary G. Beckwith, and Viola S. Bristol Collections, as well as gifts by Kate Stephens, F.W. Kelsey, Junius Henderson, Colonel Arthur F. Fischer, Charles D. Brower, Dr. Joshua L. Baily, Dr. S.S. Berry, Earl C. Huffman and many others, collections by staff members etc.	100,000 "

The collection is world wide in scope, although, as a result of the Lowe Collection, it is especially rich in species from the western coast of North and Middle America.

Types of all kinds, fossil and recent, including holotypes, paratypes, etc. number about 500.

The only endowment specifically designated for conchological purposes is the Lowe Bequest of $25,000 provided at the same time the Lowe Collection came to the San Diego Society of Natural History. A portion of the Society's general operating fund is available for expenses of the Department of Mollusks.

An important conchological library is maintained in the Department of Mollusks, in addition to conchological works in the Society's general library. The departmental library comprises some 750 bound volumes and 1050 pamphlets. Especially worthy of note are sets of Tryon and Pilsbry's " Manual of Conchology" (45 volumes), " Conchologia Iconica" (20 volumes), " Journal de Conchyliologie" (70 volumes), " The Nautilus" (55 volumes). Apart from separate purchases the most important sources of the library have been H.N. Lowe, Dr. Fred Baker, and C.R. Orcutt.

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The California Academy of Sciences, Golden Gate Park, San Francisco, Calif. was founded in 1853 and has had a great influence on the early history of science in the west. A considerable collection was built up in Paleontology and Conchology but all except a few specimens were lost in the earthquake and fire of 1906. Since 1906 a large collection has again been assembled. This has been built up by collecting expeditions of the Academy and by gifts and purchases. Various groups of organisms are represented but by far the greater part of the collection in the department of Paleontology is comprised of fossil specimens, mostly fossil shells of mollusks, of Cretaceous and Tertiary age. (con.)

Some of the details of the Recent shells in the Academy collection will follow. The large collection of Henry Hemphill was presented to the Academy in 1914. According to the report of the director for that year, that collection embraced more than 60,000 specimens of marine, freshwater and land shells, representing more than 12,000 species. This fine collection formed the nucleus of the Academy's present day collection of Recent species. To this have been added specimens from many gifts and expeditions. The collection of marine shells contains a general world representation but is especially well provided with specimens from tropical western America. Several expeditions during the past twenty years have been sent out to collect in the tropical part of the west coast.

The Hemphill collection of land and freshwater shells contains an excellent series of various west American species as well as a general representation from other parts of the world. To this was added duplicates from the D.D. Baldwin collection in 1928. That collection contains material from various parts of the world and especially from the general region of the Pacific. The present collection of non-marine gastropods may be estimated as numbering approximately 45,000 specimens representing about 4,000 species of land snails, and about 24,000 specimens representing about 1200 species of freshwater snails. A card file arranged alphabetically by species facilitates the use of the collection.

The specimens of marine mollusks are kept in 22 wooden cabinets approximately 76 inches high, 20 inches wide, and 26 inches long. The non-marine shells are housed in 4 wooden cabinets similar to the others except that they are only about 40 inches high.

Specimens from many other small collections are also incorporated in the general collection. There are a number of these such as a collection of marine shells from northern Columbia by Dr. F.M. Anderson; various specimens received from Dr. Fred Baker and F.W. Kelsey; shells from Magdalena Bay, Lower California purchased from C.R. Orcutt; purchase of a collection of land shells from China from John T. Wright in 1927; gift of marine and non-marine shells from Mrs. O.N. Sanford in 1928; a collection of marine shells mostly from the western Pacific from the Alline collection; the E. Rixford collection of marine and non-marine shells in 1939. There were many other smaller collections received from time to time and especially important expeditions were sent out by the Academy during which shells were collected from Tropical western North and South America in 1905-06, 1921, 1922, 1925,1930-31, 1932. There is also an excellent collection and library pertaining to diatoms.

The scientific library is composed of approximately 75,000 volumes and 25,000 pamphlets. This literature pertains to various branches of Natural History but especially to Botany, Entomology, Herpetology,Ichthyology, Mammalogy, Ornithology, Paleontology and Conchology.

The collection of type specimens now numbers 7,898. Of these approximately 2,500 are holotypes, or syntypes or lectotypes, and the remainder are paratypes, hypotypes and casts of type specimens.

The endowment of the California Academy of Sciences is well over a million dollars.

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The June Bulletin of the Natural History Museum of San Diego has just been received. We note that beds by the hundreds are now installed in the museum-hospital, laboratory equipment installed, elevators working, and diet kitchens and dispensaries have appeared where the birds and butterflies used to reign supreme.

However, the museum staff is carrying on in the quarters assigned to them. Although fenced in by the Navy, any adult wishing to visit may apply to the guard at the gate, state his business asking for " Mr. Abbott's office" rather than just for the museum

The scientific library under Miss Barlow's supervision is now fully available at the San Diego State College.

A REPORT ON THE STANFORD UNIVERSITY CONCHOLOGICAL COLLECTION

Prepared by A. Myra Keen, May 27, 1943

The Stanford University conchological collection is probably the largest university owned collection west of New England. It may also have a claim to distinction in the manner of its establishment, for it came about not through the chance accumulation of unsolicited gifts but because Dr. J.P. Smith, the first professor of paleontology in the Stanford Department of Geology and Mining, was awake to the necessity for studying the shells of living species as a prerequisite to the study of those which are extinct. His training abroad had convinced him that in interpreting the life and conditions of the past and in classifying fossil organisms, a thorough knowledge of living forms is basic. Hence, when he came to Stanford he was not slow in starting to build up a collection of recent invertebrates-- mollusks in particular-- as a foil for the fossil material which he and his students brought to the laboratory. Only a year or so after the founding of the University he acquired the Annie Law collection of exotic and West American mollusks, which thus became the nucleus upon which the present collection is built.

By 1915, when the alumni of the department purchased and donated the huge Hemphill collection of duplicates, Dr. Smith could no longer keep up the task of curating the great mass of fossil and recent material in addition to his regular professorial duties. Mrs. T.S. Oldroyd, a conchologist, was employed in 1916 to take over the work of cataloguing the University's shells. A year later, in 1917, the University purchased the Oldroyd's collection and appointed Mr. and Mrs. Oldroyd joint curators of the now greatly augmented Stanford conchological collection. This post each held until removed by death, Mr. Oldroyd in 1932, Mrs. Oldroyd in 1940.

The paleontological collection remained in Dr. Smith's care until his retirement, then in the care of younger professors, Drs. H.G. Schenck and S.W. Muller, until 1936, when a curator, Myra Keen, was appointed. The conchological collection was, upon Mrs. Oldroyd's death in 1940, transferred to the care of the curator of paleontology, a step which was a logical development of the policy initiated by Professor Smith in 1892; namely, that a well organized suite of Recent material should be available alongside a paleontological collection, so that students might gain a clearer insight into the structure, classification, and ecologic relationships of the organisms which they study.

During the early years of the Department no consistent effort was made to keep records of acquisitions. Important gifts and purchases each year were, however, mentioned in the Annual Reports of the President. The lists given below have been compiled from this source principally, supplemented by occasional memoranda preserved in correspondence files.

The growth of the Stanford conchological collection may be analyzed under four heads: donations, purchases, expeditions, and exchanges.

A. Donations

Date	Donor	Brief description of content
1895	Mrs. Rice	Gulf of California material
1908*b	Ralph Arnold	A large paleontological collection, with some recent shells, much San Pedro Pleistocene material, many type specimens.
1909-	George Streator	Fresh-water shells, Mississippi Valley
1909-	T.W. Stanford	Australian shells
1912-	J.C. Branner	Shells from Brazil
1912	N.F. Drake	Shells from China
	W.A. Williams	Shells from Peru and Ecuador
1913-	R.E. Tremper	Shells from Southern California
1914	Ralph Arnold	Venezuelan shells and fossils
	Harold Hannibal	Loan collection of fresh-water material and books.
1915*	Alumni	Hemphill library and duplicate shell collection (8,000 to 9,000 species)

	W.H. Ochsner	Galapagos shells
	B. Bryan	Shells from Peru and Ecuador
1918	S. Herold	Shells from Ecuador
1921*	G.W. Taylor heirs	General collection: 5,500 species
1923	W.J. Eyerdam	Alaskan shells, 280 specimens
	W. Schulte heirs	General collection: 900 species
1924*	E.K. Jordan	General collection: 1,000 species
1925*	R.H. Palmer	Shells and fossils from Oaxaca,Mexico
1928	American Mus. Nat. Hist.	Shells from Greece and Africa
1930	Philippine Bur. Science	Philippine Shells
1932*	Sarah Mitchell heirs	Large collection of Philippine shells
1934	H.N. Lowe	Gulf of California material, 850 specs.
1936	(9 donors)	600 lots from West North America
1937*	Fred Baker	400 species oriental and west coast shell
	(12 donors)	150 lots, California, Alaska,Texas etc.
1938	(8 donors)	250 lots, Guam, Samoa, West Africa etc.
1939	(5 donors)	100 lots, California, Panama,
1940	(8 donors)	400 lots, Calif., Panama, Texas etc.
1941	(5 donors)	200 lots, Panama, Ecuador
1942	(8 donors)	250 lots, Lower Calif.,China etc.
1943	(3 donors)	40 lots, Red Sea, West America etc.

* Seven of these donations-- indicated by an asterick following the date are of exceptional size or quality, six representing the life work of a collector. Altogether, 73 donor's names are recorded. There is evidence to suggest that many smaller gifts were not mentioned in the Annual Reports and that the true number of donors would be well over one hundred.

B. Purchases

1. Annie Law collection, probably in 1892. Exact date and details of cost not as yet ascertained.
2. Oldroyd collection of about 9,000 species, purchased in 1917, a collection especially rich in microscopic material from Southern California. It's speciality is West Coast mollusks, of which there are many types and figured specimens. (Cost, $9,600).
3. Japanese material from Y. Hirase, dealer 75
4. Selected material from Hugh Fulton, dealer 800
5. Miscellaneous small purchases 10

C. Expeditions, financed entirely or in part by the University

1. T.S. and I.S. Oldroyd, to Puget Sound, summer of 1918
2. " " " " 1919
3. " " Alaska , " 1920
4. L. Wiedey and R. Valentine, to Gulf of Calif. 1929
5. I.S. Oldroyd, to British Columbia, summer of 1934
6. Myra Keen, to Oregon and Washington coasts 1935
7. Myra Keen, to San Diego and Monterey, Calif. 1936
8. Myra Keen, to Punta Penasco, Mexico 1941

D. Exchanges

The total quantity of material received by exchange with other institutions and with collectors is difficult to estimate, because records were kept only sporadically prior to 1930. The files list 67 exchanges of shells; certainly many more than this must have been made.

The war has, of course, affected this source of supply. As late as the autumn of 1941, however, shipments of material came from Spain and Argentina.

- Present size and monetary value of the collection-

The collection is now housed in 34 large cabinets in two rooms of the Geology Building. The major part of the collection, together with the conchological library (numbering over 1,100 books and about 2,000 pamphlets), is in the conchological laboratory. Two cabinets, comprising the geographic collection, to be described below, and seven glass-topped exhibit cases are in a separate room, the Museum. At present only a rough estimate of the number of species in the collec-

-tion is practicable. A count of sample drawers suggests the following approximation of contents:

Marine mollusks	26,500 trays	11,000 species
Land mollusks	4,800 "	2,500 "
Fresh-water mollusks	4,000 "	1,500 "

The amount of money now invested in the collection approaches $40,000. This includes the purchase of shells, financing of expeditions, costs of cabinets and curatorial supplies, and the salaries of the curatorial staff members.

- Purpose and use of the collection-

The investment of so large a sum of money by the University, over the years, was not for the pleasurable yet idle hope of outranking neighboring institutions in size of collection. Rather, there has been a definite purpose of acquiring comparative material which would facilitate research in paleontology, and would aid in training students both as paleontologists and as field geologists. Furthermore, in harmony with the University's ideal of aiding in development of the natural resources of the West, special attention has been given to building up as complete a collection of West American mollusks as opportunity permits.

In handling the collection, it is the goal of the present staff to arrange the material in such a manner as to make it of use both for research and for the illumination of the problems which confront the student of paleontology. To accomplish this, a division of the collection into four component parts has been found expedient. These are:

A. The Type Collection- Here are housed those irreplacable specimens which form the basis for description of new species or which are illustrated or discussed in the literature. Many of the holotypes are unique-- that is, they are the sole known representatives of the species. So far as possible, duplicate paratypes, specimens which authors have had in hand when preparing the descriptions of new species, are distributed to other institutions mainatining type collections, in exchange for similar material. The collection, which conatins both fossil and Recent material, is meticulously catalogued and cross indexed. About 712 trays of Recent shells are in the type set, as compared to 1,500 trays of fossil mollusks and 800 of other invertebrates. The types are kept in a locked cabinet separated from the rest of the collection.

B. The Systematic Collection- This is the principal unit. It is housed in the conchological laboratory in cabinets grouped around the centrally located library. The arrangement within the cabinets is systematic: that is, the sequence of genera is not arbitrary or alphabetical but follows the order given in Thiele's Handbuch. Under each generic or subgeneric category, West American material is segregated, for convenience in studying our local fauna. Arrangement of species is alphabetical. With minor exceptions, all material is numbered and each numbered lot represented by our catalogue card. Two cards would be desirable, but as yet only the new material being added is so indexed. An adjunct to the systematic collection is the collection of duplicate material which is available for exchange; this, as it is accumulated, is stored in alphabetically arranged boxes for future use.

C. The Geographic Collection- In the field the collector, be he conchologist or paleontologist, meets up with assemblages of species or faunules, not with systematical arrays of material. To try to identify the results of a day's collection by using a large collection for comparison or by leafing through manuals which list all known species of a given genus is a bewildering experience, especially for the novice. Tp students thus baffled and to the ecologist who wishes a comprehensive view of molluscan distribution, the geographic collection is of special service. It is a series of drawers, each from a different collecting station, each station one degree of latitude north or south of that in the drawer above or below. Because the coast line of Western North America is relatively straight, such treatment of material brings the diffuse facts of differential distribution into sharp focus. The collection covers the area between Icy Cape, Alaska, and northern Peru, and only specimens of known authenticity are admitted in it. All specimens are numbered and catalogued by genus and species for ready reference. Within each drawer the arrangement is alphabetical.

Because the material largely duplicates what is in the systematic set and because it is completely catalogued, this collection is available to beginning students and to qualified visitors, whereas, in the interests of science, the Type collection and the Systematic collection are open only, under the supervision of the curator, to advanced students and to visitors whose interest is more than casual. The geographic collection is housed in two cabinets in the museum room, where it may be compared directly with the Quaternary and Tertiary stratigraphical collection of California fossils.

D. Exhibits and teaching material- In the Museum an attempt is made to display attractive material and at the same time to impart information concerning geographic distribution, ecology, and classification. New exhibits are being prepared at the rate of about one per year.

Material has been segregated in a special set for instruction of students in elementary and intermediate courses in paleontology; this teaching set is maintained in one of the paleontological laboratories.

- Plans for the Future-

As there are few universities and museums in this country which attempt to segregate and maintain types in a special collection, it seems desirable to call the attention of conchologists and paleontologists to this repository. One way in which this can be done is by a consistent policy of distributing available paratypes to other institutions and by soliciting like material in exchange. Such a program is planned but must be postponed until transportation is safer than at present.

The systematic collection has reached a size such that random contributions add few species to it. Should such material come from authentic sources, however, it may profitably be substituted for material already in the collection under such dubious locality labels as " South Pacific" --provided, of course, that the new material represents the same range of morphologic variation as the old. In other words, a policy of adding first to quality then to quantity should be adopted. A large percentage of the material in some of the early acquisitions is in need of replacement, a state of affairs not peculiar to the Stanford collection, for most large collections are in process of similar overhauling.

In adding to quantity, a plan is essential, for species new to the collection must now be acquired at greater and greater cost both of money and of effort. What kind of material would be of most service should be decided first; then ways for obtaining it may be devised. Because Stanford has a combination of facilities well suited for research in molluscan taxonomy-- namely, a large technical library, a large collection, and staff members interested in problems of systematicspp it would seem wise to stress this field of inquiry. For taxonomic c studies the examination of genotypic species is a necessity. Therefore, additions to the already gratifying large collection of genotypes would be highly desirable. During the present lull, preparation of lists of needed material should be undertaken, which may be submitted to colleagues over the world as soon as shipping is again practicable. The large stock of duplicate or exchange material from the West Coast of North America, from Florida, from the Philippines, and from the mid-continent has been and will continue to be advantageous in procuring new material.

Lastly, as a corollary to taxonomic studies, critical revisions of the material in the collection should be made from time to time, checking identifications and arranging the specimens in order of genetic relationship so far as that may be construed. Such a general plan, consistently followed, should make the collection of increasing use and value.

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The Type Collection of Dr. S.S. Berry- Redlands, Calif.

" About my type-collection: I do have a great many, for when I first began serious study of mollusks I found that we in the west were almost fatally handicapped by the thoughtlessness of so many of the earlier collectors and students in permitting so much of their priceless pioneer material to be accumulated in the east where most students actually in the field would never again have access to it, and still worse in their failure truly to cherish what they managed to retain. When I first woke up to the meaning of this I was shocked to discover that even then there was not a single institution on the coast (excepting perhaps the California Academy, which had just lost practically the whole of its absolutely unreplaceable molluscan types by reason of their having no one on hand sufficiently interested to carry them from the doomed building as Miss Eastwood courageously did the much more numerous, bulky, and inflamable plant types) which was paying the slightest attention to the matter. What little was done for the benefit of later students was being entirely done by individuals, most of whom did not indeed fully appreciate what they were doing or could do until much later. I shortly made up my mind that I could perform no better service with my collection than deliberately to set about the accumulation of type material in it, particularly type-material from western North America and the eastern North Pacific. When I now stop to think how very much of this material would have been lost forever if I had not , at considerable trouble and sometimes at more expense than I could afford, done as I did, I quite fail to see the force of the argument occasionally expressed to me by certain of the newer crop of students that an individual has no right to keep types in a private collection. In my own case I have followed the principle of giving other students far more liberal access to them than a good many institutions do. I am constrained to admit that I now have so many holotypes that the care of them is a heavier responsibility than I enjoy, and I have for some time since debated with myself their deposition in one of our institutions, but which one to choose from the double viewpoint of their reasonable safety and proper utilization, particularly in the light of considerations which this war brings so forcibly to our minds, is a question that I have not yet answered to my complete satisfaction.

As to the listing or counting of my type-material for you as you request, I am afraid that it is a far bigger job than I could possibly undertake at the present time. My types, co-types, and paratypes number literally thousands, including not only most of my own, but many of other peoples, going back to even Cooper, Binney, and Rowell."

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Dr. Berry writes that he has been spending a large part of his time the past winter studying the Hilltop Quarry fossils. His work will be published shortly and we are all looking forward to seeing it.

Dr . Myra Keen of Stanford University writes that she has been devoting most of her time recently to the fossil collections.

Don R. Edmonds, 3022 Hinano Street, Honolulu, T.H.I. Don's many friends will be interested in his new address.

Mrs. Henry Jaeger, Box 644, Haines City, Florida. would like to correspond with collectors interested in exchanging for Florida shells.

Ralph Borman Jr. has been honored by being selected from many by the U.S. Navy to be sent to the California Institute of Technology to carry on his education.

Mrs. John Q. Burch went collecting in her lath house at the Burch home in Redondo Beach and the result was the addition of a number of Zonitoides arboreus Say to the family shell collection. This is a new record for us. They apparently like their Begonias.

Dr. Howard R. Hill of the Los Angeles Museum entertained the Long Beach Shell Club at his home Sunday, June 6 and among other things passed out some of the Venerupis philippinarum Adams and Rose from Hawaii. Many of us were glad to have this species especially since Walter Eyerdam reported their introduction into Puget Sound and addition to the fauna of our own coast.

LONG BEACH SHELL CLUB

The next meeting will be held on Sunday, July 4, at 2:30 P.M. at the home of Mr. and Mrs. E.P. Baker, 417 S. Downey Ave., Downey, Calif. Mr. Baker will be the speaker of the day on the subject of " Small Bivalves".

Minutes of the June Meeting, 1943

The Long Beach Shell Club met at the home of Dr. and Mrs. Howard Hill in Los Angeles, for the June meeting, June 6th, Sunday afternoon at 2:30 P.M. A large group who had not had the good fortune to see the Lewis collection, now housed at the Los Angeles County Museum, met Dr. Hill at the Museum at 1:30 and enjoyed browsing around among the cases, examining the beautiful shells collected from all over the world, and then meeting at the Hill's residence for the meeting.

The early comers parked themselves in Dr. Hill's Shell Room, and of course, as others came, they too joined the enthusiastic collectors who always delight in going over another's collection and comparing mentally their own or other collections with the one at hand. Then too, Dr. Hill always has so much collateral material such as new and old books and articles that when you get going well it is hard to break up and find a stopping place. But the president finally got the group into the large living room where seats had been arranged for the meeting.

The minutes had already been read, as copies had been mailed to all members, and there being no corrections, they were ordered filed.

Dr. Lloyd's kind offer of the Cabrillo Marine Museum for a permanent meeting place for the club, was taken under advisement, and after some questions were answered as to general availability, public meetings, restrictions of the Play Ground and Recreation Dept. etc., the secretary was ordered to write and thank Dr. Lloyd for his offer and explain that the rest of the year 1943 was provided for as to place of meeting and program, but that if the offer remained open and all other things being equal at the beginning of 1944, we would contact him again.

Nomenclature and Publications Committee had nothing new to report. The Librarian offered a new book for the reading list of teachers for children and beginners, Muriel Lewin Guberlet's " The Seashore Parade", published by the Jaques Cattell Press, Lancaster, Pa. 1942.

The program committee presented Dr. Howard R. Hill, our host, as the speaker of the hour, who spoke to us on the subject of Tritons. Having two large drawers full of shells from all over the world for illustrations, his talk was exceedingly interesting, especially for those of us who had never so much as seen some of them before. No doubt the full text of his talk will be printed in the Minutes on some other page.

At the close of the meeting, many hurried back into the shell room for more looks, but others began preparations in the back garden for our picnic lunch. There Dr. Hill had a large number of duplicate shells for distribution among those who as yet had none of the kind. Groups around tables, lawn swing, etc. chatting about shells and kindred interests filled the hours until time to go home. All agreed a wonderful day and looked forward to next year for a repeat.

E.P. Baker, Secretary.

Four visitors were present for the first time, Dr. and Mrs. H.P. King, friends of the Hills, Mrs. Esther Hollister, and Mrs. Herman Miller. Mrs. Jennie Linkogel and her daughter, Ledona B. Keppen, members of the Southern Calif. Club were present as also two who, having met with us before, desired to be enrolled as members, Ruth Beck, and Lavina Dobler. 28 present altogether.

Ruth Beck, 334 East Ocean Ave., Long Beach
Lavina Dobler, 3717 Walnut Ave., Long Beach

CYPRAEA IN THE HAWAIIAN ISLANDS

By Charles A. Allen

About thirty of this genus are found in the Hawaiian Islands. A great number of these are taken in shallow reef waters. Except Cypraea caput-serpentis Linn., none are common.

Cypraea arenosa Gray- This species is gradually dying out in the islands, and is rarely taken living or dead.

Cypraea sourra Chem.- Rare in living or dead state. Most of them found as an empty beach shell.

Cypraea isabella Linn.- Found in and under coral heads, dredged and in shallow reef waters. The writer has taken it at night on exposed reef.

Cypraea carneola Linn.- Dredged and taken on shallow reefs. It is usually under large coral heads. These heads usually require two men to turn them over. One of our largest Cypraeas.

Cypraea fimbriata Gmelin- Our smallest Cypraea and is found concealed in coral heads. After a heavy surf the writer has found it on the beach alive. When sorted they show a difference.

Cypraea punctulata Gray- Seldom taken alive and is rarely observed as a beach shell. It is quite common in old Honolulu and Pearl Harbor dredgings.

Cypraea macula A. Adams.- W.A. Bryan reported it from Honolulu Harbor. I have never seen this species.

Cypraea tabascens Solander- Occasionally found in old Pearl Harbor dredgings. The writer has never seen it alive.

Cypraea rashleighana Melville- This species is found in old dredgings, and sometimes collected as a dead beach shell. It is collected alive on Midway Island and Pearl and Hermes Reef.

Cypraea mauritiana Linn.- Easily taken in shallow reef waters where there is a heavy surf. The writer has taken it in tide pools at night.

Cypraea reticulata Mart.- Quite often taken in deep water, shallow reef water and in tide pools. It has a wide distribution.

Cypraea caput-serpentis Linn. This, our most common Cypraea, is collected in holes in lava and coral at low tide line. It has a wide distribution throughout the entire island group.

Cypraea intermedia Gray- I have never seen this species taken. W.A. Bryan reports it from the Kona Coast, on Hawaii.

Cypraea moneta Linn.- Not as common as on other Pacific Islands. It seems to be confined to a very few localities. The writer has collected it on mud flats and exposed reef at night.

Cypraea tigris Linn.- This species is our largest. It sometimes reaches a length of six inches. It is also one of our rarest. Inhabits deep water.

Cypraea lynx Linn.- Very rarely taken alive. The writer has only seen one live specimen taken on Kauai.

Cypraea vitellus Linn.- It is not often that a live specimen is collected. Found under large coral heads. The writer has several specimens from Waikiki Beach, Oahu.

Cypraea esontropis Duclos- Very rarely taken. It is found in old dredgings.

Cypraea cumingi Gray- The writer has never seen this species taken. However, W.A. Bryan reported it from Honolulu Harbor and Midway Island.

Cypraea peasei Sowerby- This species is quite similar to C. cumingi and esontropia. It is rarely taken alive. The writer has several specimens found hidden in coral heads and dredged. It is also frequently fpund in old dredgings.

Cypraea erosa Linn.- Rarely collected alive. The writer has several specimens from old Pearl Harbor dredgings.

Cypraea helvola hawaiiensis Linn.- Easilt taken in shallow reef waters in and under coral heads. Has a wide distribution in the island group.

Cypraea annae Robt.- This, I believe is a sub species of C. semiplota, one of our endemic Cypraea.

Cypraea poraria Linn.- Not very often taken alive. The writer has found it several times as an empty beach shell.

Cypraea cruenta Gmelin- Quite rare in the number collected alive but this shell is fairly common on the beaches.

Cypraea annulata Gray- Has been reported taken from Honolulu Harbot, but not collected by the writer.

Cypraea tessellata Swainson- This shell is endemic and very rare. It is occasionally collected as an empty beach shell. The writer has one juvenile collected at night on Koko Head Reef. It is taken more easily on Pearl and Hermes reef. Quite often it is found in old Honolulu and Pearl Harbor dredgings. These old dredged shells are as a rule in an excellent state of preservation.

Cypraea sulcidentata Gray - One of the endemic species, it is not uncommon in old dredgings. Specimens are more easily found on Pearl and Hermes Reef. It is quite often found as a dead shell on the beaches. The writer has collected several live specimens on Waikiki Reef.

Cypraea semiplota Migh. - An endemic species quite common as a dead beach shell. Frequently taken in shallow reef waters. They are hard to find as it is necessary to break open coral heads.

Cypraea ostergaardi Dall- This shell, much sought after by Hawaiian collectors, has never been collected alive. It is one of the endemic species. Quite often taken in old dredgings, more frequently on Midway Island. The writer has several specimens from Midway and Oahu Islands.

Cypraea childreni Gray -Collected by Mr. Jens Ostergaard from Honolulu Harbor dredgings. The writer has never seen this shell taken. A number of them have been reported as in a fossil state on the Island of Oahu.

Cypraea pelita Roberts- This form may be a variety of C. semiplota. Frequently taken in old dredgings.

Cypraea nucleus Linn.- This species is very rare. Beach specs. occasionally taken.

Trivia oryza Lamarck-Not very often taken alive. Common as beach shell.

Trivia insecta Migh.- Has a wide distribution. Common as a beach shell.

Trivia pilula Kein. equals T. globosa Gray- This species fairly wide spread. The writer has never seen it alive. Common as beach shell.

Trivia grando Gask.- I have never seen this shell. W.A. Bryan reported it from Honolulu Harbor.

Trivia exigua corrigata Pease- Reported from Pearl and Hermes Reef and Laysan Island. Sometimes collected as beach shell. The writer has never seen it alive.

Trivia pellucidula Gask.- Fairly common beach shell. Rarely collected alive.

Trivia tremeza Duclos- This species with its splashes of red is our most attractive Trivia and is fairly wide spread.

I have no doubt but that there are several new species of Cypraea of which the descriptions will soon be off the press, also a number of the names now used will be replaced by new ones. Any corrections of this list will appear in a later issue.

Mr. Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. has just sent us some small shells for classification that seem to be without a doubt Phytia setifer Cooper. The specimens sent us came from the Strait of Juan de Fuoca but Mr. Eyerdam states " I have collected the above species also at Manitou Beach (1936), Kitsap Co., Wash. and at Coupeville (1928), Whidby Island, Wash. always under drift logs at high tide mark on the edge of the marshes."

So far as we have been able to determine the most northern record published for Phytia setifer Cooper is Humboldt Bay and Mr. Eyerdams shells establish quite a range extention.

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We have the announcement of a new book by our good friend and associate member, Mr. Norman Wallace Lermond. The work is to be his Autobiography and the prepublication price is $2.10 postpaid. The host of friends of Mr. Lermond will, of course, order copies. The address is N.W. Lermond, Knox Arboretum, Thomaston, Maine.

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With the customary indiscretion of the Californian when the subject of climate is mentioned, your reporter is not surprised to receive a card from our good friend, W.J. Bower, announcing that after all he has decided to return to New York from St. Petersburg, Florida. Mr. Bower had to visit his New York occulist and only casually mentioned some hot weather. His present address is 4 Edgehill Close, Bronxville, N.Y.

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We wish to acknowledge with thanks the generous donations of the following to the costs of mimeographing these minutes: Mr. R.E. Galbreath, Rl, Newhall, Calif.; Evelyn Craig, 61 Richardson Lane, Wilmington, Delaware; Mrs. Kate Stephens, 3746 Park Blvd., San Diego, Calif.; Dr. S.S. Berry, 1145 W. Highland Ave., Redlands, Calif.; Dr. L.K. Darbaker, 424 Franklin Ave., Wilkinsburg, Pa.; Mr. and Mrs. North McLean, Washington, Conn.

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Mr. E.P. Baker, 417 S. Downey Ave., Downey, Calif. sent in the following item on collecting " Memorial Day, May 31st,- Irene and I drove down to Corona del Mar and spent some hours before and after low tide crawling around and over the rocks and pawing among the sand and pebbles. We brought home as usual a bunch of junk, which at the time seems irresistable, and later has to be thrown out for the simple reason that there is no place to put it. But among the keepable things we found we had collected, 9 Gadinia reticulata; 16 Hipponix tumens; 5 Hipponix antiquatus L.; 3 Fissurella volcano crucifera ; 6 Trivia solandri; 7 Trivia californica; 3 young Cypraea spadicea Swainson. Nothing new but good specimens all, and will help some youngster in their start of a collection.

We also brought home in a five gallon jar of seawater and eel grass and sea lettuce, a fine specimen of Cribrina xanthogrammica (sea anemone) which lasted for some days on limpets which I fed him,or her. The children at school enjoyed it greatly."

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Ran into this one in an old Nautilus (July 1900)- Page Dr. Gregg-

To a Slug. (In Alcohol).

Hail, Limax / - clammy, slimy thing,
Poor houseless wretch, of thee I sing /
Though ended is thy earthly run,
Thy glory is but yet begun.
For Science, with obtrusive pride,
Will keep intact thy mortal hide
And suffer thee, for future gain,
In best of spirits to remain.

Oakland, Calif. Apr. 15, 1900- H.H. Bruenn.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA - No. 25

July 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interestd in receiving them, may send us donations to help defray the cost of material and postage.

All members are urged to attend the next meeting, July 25, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the June Meeting- 1943

The Conchological Club of Southern California met as usual at 2:30 P.M. June 27, 1943 at the Los Angeles Museum. There were 34 m3mb3rs present.

We were glad to have present with us again, Mr. A.M. Strong, who has been missed the last few meetings. He gave a report concerning the differences of opinion concerning some of the species of mussels and their near relatives. He promised to summarize these differences in the minutes which relieves the secretary of a burden too much for her weak understanding of this, to her, perplexing group.

Dr. H.R. Hill furnished for distribution some beautiful specimens of Venerupis philippinarium Adams and Reeve from Honolulu, T. Hawaii. This species seems to have taken up residence on some of the north Pacific beaches and is to be seen in some of the markets.

Miss Edna T. Cook and Mrs. Effie Clark had duplicates of Taras parieis Con. which occurs most abundantly in the " Anomia Bed" on South Vermont Ave. There were more duplicates than members present, and the excess was left with Dr. Hill for distribution should anyone be interested.

Dr. W.O. Gregg took up the subject of land slugs where time cut it off at the last meeting. These shellless mollusks are so little known though so abundant that it seems strange that they have had so little attention. Dr. Gregg has promised to write up his paper for the Minutes and some of us may be able to start exploring a new field.

At the close of this paper, the meeting was adjourned.

Effie M. Clark, Secretary.

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This issue begins the third year of these monthly mimeographed papers. We wish to again thank the many friends who have contributed to their cost. The size and number of papers included depend entirely upon the available funds.

John Q. Burch

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We are in receipt of a very interesting paper dealing with the fauna of this coast- Malacological Notes III- Zoological Series of the Field Museum of Natural History by Dr. Fritz Haas. Dr. Haas has described two new species in this paper Alvania (Willetia) microglypta and Chrysallida (Chrysallida) ornatissima. Both are from Monterey, Calif. In addition Dr. Haas has included some very interesting natural history notes on some of our better known species. These papers should certainly be in every west coast conchological library.

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We were surprised to receive a box of land shells from Glacier National Park from Pfc. Conrad Limbaugh, East AAB, Great Falls, Montana. We had not known that Conrad was in the service.

MINUTES OF THE LONG BEACH SHELL CLUB* July 4, 1943

The Long Beach Shell Club met at the home of the Edward Baker's, 417 S. Downey Ave., Downey, Calif., some 15 miles inland from Long Beach proper. The meeting was held in the garden under the shade of the olf pepper tree. There were twenty five present. Eight were present, who, though not members of the club, are often with us. Mr. and Mrs. George Willett of the Los Angeles Club, also Mr. E.J. Post were welcome visitors.

The gas problem and the fact that the week end was a national holiday kept a number of regular members from being present.

The meeting was called to order by the President, Mr. Ralph Borman. The minutes were approved as read and ordered filed. A letter from Emory Chece's uncle in St. Petersburg, Florida, was read and enjoyed. He is sending out a box of duplicate material for distribution among the members. Thanks.

The Nomenclature Committee reported on some booklets which were given to those interested. Dr. Hill reported that Charles Allen had picked up an old book in a second hand store entitled, " Shells of Land and Sea", by Frank Baker which was an excellent book for beginners. Emory Chace brought to our attention a copy of Dr. Haas' Malacological Notes III, Vol.29, No.1, June 10, 43, Zoological Series of the Field Museum of Chicago. Some interesting illustrations were contained of Diplodonta orbella nestings. Mr. Chace also handed out several packages of fossil shells, Taras paralis (Conrad) sent in by Mrs. Effie Clark, who dug them out of the Anomia Bed on S. Vermont near Sepulveda.

The next meeting will be held at the home of Mr . and Mrs. Milton Morgan, 47, 66th Place, Long Beach, with the Fred Barnett's as host.

Two clippings were read of interest. Snails, common garden variety, were reported shipped east for " the table", and were said to be of as fine a quality as those formerly imported from Europe. Several were reported arrested for drag net fishing in Malibu waters.

E.P. Baker was presented as speaker of the afternoon. His subject was " Small Bivalves". Some fourteen different species were discussed and specimens shown. Additional information was sought for and much helpful data was given by those present. The little shell Milneria kelseyi provoked much information and further research on the part of the speaker. His paper will be forthcoming later.

Ice-cold watermelon was served in the ramada and the temperature of the afternoon made the refreshments just right. The shade felt good and the breeze was refreshing with congenial spirits and shells to talk about a good time was enjoyed by all. E.P. Baker, Secretary.

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Mrs. Effie M. Clark, is enjoying her summer vacation with her son. The address is P.O. Box 511, c/o Ray S. Williams, Yuba City, Calif.

Dr. E.W. and D.S. Gifford, 2535 Le Conte Ave., Berkeley, Calif. write of some very interesting collecting." We wish uou could have been with us at Bolinas for the tides of June 18-21. We worked hard scraping sand for four mornings. We were seeking Olivella pycna, for Bolinas is the type locality where the type specimens were dredged in three or four fathoms of water. Well, we landed around 350 topotypes. We did not have to dredge them either."

Which reminds your editor that while having collected Olivella pycna from several localities he has no topotypes in his collection at this time.

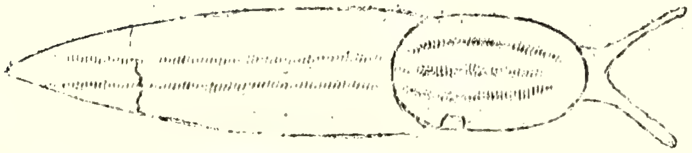
Harold W. Harry, Ph. M. 2/c, U.S. Naval Hospital, Corona, Calif. dropped in for a day of shelling recently. He had a recent letter from Pvt. Glenn R. Webb, Station Dispensary, Army Air Base, Dover, Delaware. Glenn sent rather an imposing list of species he has been successful in taking in his spare time around Dover. If he will send us that list we will be happy to run it in these minutes.

NOTES ON

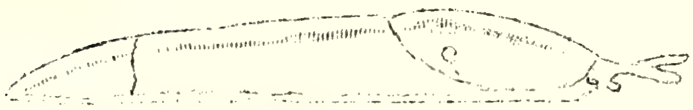
LAND SLUGS

OF SOUTHERN CALIFORNIA

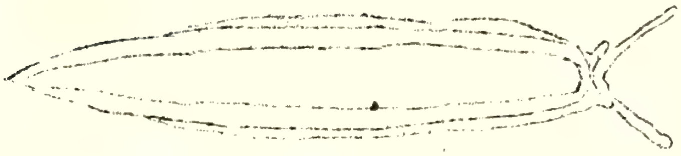
by Wendell O. Gregg, M.D.



DORSAL VIEW



SIDE VIEW



VENTRAL ASPECT

Limax marginatus Muller

Eight species of land slugs have been taken in the vicinity of Los Angeles, California. Of these, six species belong to the family Limacidae while two belong to the Arionidae. Five of our species of Limacidae have been introduced. We have three species of slugs which are indigenous. Externally all of our slugs present certain common characteristics.

SLUGS IN GENERAL. A specimen of the introduced but very common *Limax marginatus* Muller may be chosen for study of the external characteristics. If we will examine the accompanying illustrations, or better still find a live specimen out in the yard under an old board or flower pot, we will see certain outstanding features. Situated dorsally over the anterior portion of the body is the mantle or shield. On the right side of the mantle will be seen an opening, the respiratory orifice, or pneumostone. This will be seen to open and close from time to time. If the animal is at rest it is generally closed. Then it may open widely upon resumption of activity. This opening is located near the lower border of the mantle at the junction of the posterior fourth with the anterior three fourths. A minute cleft runs downward and forward from the lower margin of the pneumostome to the border of the mantle. The position of the pneumostome may vary in different genera of slugs and is of value in classification. In all slugs found locally the position of the mantle is as in *L. marginatus*. In *Philomycus* which is found in eastern North America the mantle covers the entire dorsal surface of the body.

Anteriorly, we see two pairs of tentacles. The superior and longer of the two pairs are called ocular tentacles. At their extremities are located the slug's eyes. The lower tentacles are much shorter and are probably concerned with the senses of touch and smell. Just posterior to the base of the lower right tentacle is the genital orifice. This is often difficult to see in the living specimen but clearly visible in properly prepared and preserved specimens. The main portion of the animal which extends forward beyond the anterior portion of the mantle is spoken of as the head. In some species there is a narrow interveing portion or neck.

The dorsal portion of the body posterior to the mantle is called the back. The back of *Limax marginatus* is rounded with only a slight suggestion of a keel near the attenuate posterior end. When the animal is fully extended this suggestion of a keel is imperceptible. The keel is definitely marked in preserved specimens of *L. marginatus*.

From the side view the lateral border of the sole is clearly seen, separated from the body by a groove, the lateral furrow. The under surface of the sole is best studied by placing a live slug on a piece of glass and observing from the under side. It will be seen that locomotion is produced by a succession of forward waves of expansion areas which form posteriorly with rythmic regularity and pass to the anterior end of the sole. A central area, occupying scarsely more than one third of the entire sole, is to be noted. In preserved specimens it may be noted that clearly defined longitudinal grooves separate this central area from the lateral areas. The central area extends from the tip of the tail to a point just behind the anterior extremity of the sole. If we again turn our attention to the living specimen crawling on the under side of a glass plate we note that the forward waves of expansion areas are restricted to the central area of the sole. The term " locomotor disc" has been applied to the central area by many authors while others have applied the same term to the entire sole. Another term used to designate the central area is " locomotor band". When the sole is made up of three areas as in *Limax marginatus*, the species is said to have a tripartite sole. When the central area is separated from the lateral areas by longitudinal grooves the sole is said to be " distinctly tripartite". Still viewing from the under side, the mouth can be seen located between the two lower tentacles.

Back to the mantle, if we examine this structure closely we note that the surface is marked with fine concentric striae suggesting the pattern of the friction ridges of the human finger tip. In preserved specimens this characteristic can not be seen but the mantle appears smooth. The back is surfaced with elongate tubercules. The characteristic markings of L. marginatus consist of three longitudinal dark bands on the mantle with two dark bands on the back.

Another feature to be noted in the illustrations is a transverse wrinkle or constriction about two thirds of the distance back toward the tip of the tail from the posterior edge of the mantle. The living specimen from which these sketches are drawn was taken in my yard under a rotten log on May 30, 1943. At that time the constriction was definitely more pronounced with the area posterior to it noticeably shrunken as if from atrophy resulting from restricted circulation. After two weeks of quiet confinement with an abundance of food the posterior end is quite filled out. As observations of this date have continued with annoyance to the animal which shows a particular dislike for the bright light on my desk, I note this constriction becoming more pronounced. Since this feature, to the best of my knowledge, has never been reported in this species, (Limax marginatus) or any other species of the Limacidae, it would seem of interest to give the subject further consideration at this time. I have noted many specimens in the immediate vicinity as well as elsewhere, that presented this character. In some localities it was not noted in any of the specimens observed. Before me is a set of eleven specimens (alcoholic) of Limax marginatus collected in my yard at 2200 S. Harvard Blvd., Los Angeles on Nov. 15, 1941. Of these, three show no signs of constriction; four show definite evidence of constriction; two are short with blunt posterior extremities, suggesting constriction when very immature with consequent non-development of their tails; two with definite constriction at time of collecting accomplished complete self-amputation of their tails while in the drowning jar. This habit of forming a constriction near the posterior end of their body with possible self-amputation of their tails has seemingly been overlooked by observers though the the self-amputation habits of Prophysaon have long attracted attention.

Comparing habits and life histories of our introduced species of slugs with observations recorded in countries where they are indigineous reveals vast changes from expected behavior. Not having been previously recorded, I assume that the self-amputation habit observed in Limax marginatus is peculiar to the immigrants of this country. Vast changes in feeding habits are noted. One species of slug (Deroceras laeve Muller) introduced on the Pacific Coast has been observed to develop by parthenogenesis.

(Further notes on food habits, internal anatomy and habits of reproduction to be reported later as time and space permit.)

Family LIMACIDAE

In the Limacidae the jaw is said to be oxygnathous. It is smooth with a beak on the cutting edge.

Genus Limax, Linnaeus 1758 . Mostly large slugs; mantle, or shield marked with fine concentric striae suggesting the pattern of the friction ridges on the human finger. The back is marked with elongate tubercules, intervening grooves generally darker than the tubercules and thus forming a reticulation, or network. The back is bluntly keeled; this is more pronounced posperiorly. The sole is distinctly tripartite, consisting of a medial and lateral area separated by longitudinal grooves. There is no caudal mucous pore. The pneumostome, or respiratory orifice is located on the right side of the mantle at the junction of the posterior one fourth with the anterior three fourths.

The viscera do not show spiral torsion. The intestine has two anteriorly directed loops. When present, the rectal caecum is adherent to the dorsal wall and joins the rectum just before the latter penetrates the dorsal wall.

LIMAX MAXIMUS LINNAEUS,1758

Range: Europe. Introduced into South Africa,Australia,New Zealand and North America. In western United States it has been reported from Colorado, Utah, California, and Oregon. Generally it is only locally established. Though relatively common in the San Francisco Bay region, records from southern California are few. Since it was formerly confused with Limax marginatus at least some of the older records are no doubt referable to that species. The writer has never taken it in Los Angeles county. A single specimen in the Los Angeles Museum collection bears the following data, " Hollenbeck Park, Los Angeles, Calif., 1922. Gordon Grant, collector".

This slug is recognized by its large size and by its coloration. Generally three and a half to four inches long, specimens have been reported up to 200MM in length. The body is gray marked with longitudinal stripes and rows of spots which vary in color from gray and brown to black. The mantle bears spots and blotches which are generally irregular though they may bear a definite relation to the longitudinal color pattern of the body. The sole is white. As in other species of Limax the sole is distinctly tripartite. The mantle is marked with fine concentric grooves. The back is reticulated with elongate tubercules. Its slime is clear and uncolored. This slug bears the distinction of being the one most frequently illustrated.

The viscera do not show spiral torsion. In L. maximus there is no rectal caecum present. No atrial or penial appendices are present.

LIMAX FLAVUS LINNAEUS , 1758

Range: Europe. Introduced into North and South America, Australia, New Zealand, Japan, China, and South Africa. In California it has been reported from Butte, Alameda, San Mateo, Ventura, San Bernardino, Los Angeles, and Orange counties. In Los Angeles county it is relatively common.

It is the largest of our common slugs. A specimen before me (preserved in 4% formaldehyde) measures 4 3/4 inches (112 mm) in length. Color, olive above, marked irregularly with spots of light yellowish gray. Over the back the surface is marked with fairly regular, coarse, oval tubercules. There is a scattering of light colored tubercules thus producing the spotted appearance of the back. The light colored tubercules are more numerous along the dorsal keel giving the appearance of a light colored dorsal stripe. Lower on the sides the tubercules are all of a light yellowish gray color with the areas between the tubercules of a darker color, thus producing a reticulation which fades out toward the margin of the sole. The sole is of a light yellowish gray color, Ocular tentacles are bluish. The mantle is marked with concentric striae as in other species of Limax. Normally this slug secretes a clear uncolored slime but when agitated it secretes a yellow slime which is responsible for its name. I have seen preserved specimens coated with this yellow mucous slime.

The rectum is provided with a posteriorly directed caecum which lies next to the dorsal wall of the body cavity. No astrial or penial appendices are present.

LIMAX MARGINATUS MULLER , 1774

Range: Europe. Introduced into Australia, New Zealand and North America. It is widely distributed in California. About Los Angeles it is very common. The writer has personally collected it from Santa Barbara to Orange counties, including Riverside and San Bernardino counties.

Though much smaller than Limax maximus, it has been much confused with that species. A specimen which is preserved in formaldehyde, measures 2 3/8 inches (60 mm) in length. This represents an unusually large specimen. The ground color is light brown with dark gray or black bands. In the immature there are three broad longitudinal bands on the mantle, and two stripes on the back near the dorsal line. In more mature individuals the middle band on the mantle tends to dissapear and the dorsal lines become very narrow.

The rectum has a posteriorly directed caecum. The penis has a digitiform appendix. Either of these internal characters are sufficient to distinguish Limax marginatus from Limax maximus in which they do not occur.

Genus DEROCERAS RAFINESQUE, 1820

Mostly small slugs; mantle marked with closely concentric striae and the back with elongate tubercles. Tip of the tail is slightly keeled. Foot is distinctly tripartite. No caudal pore is present. The intestine has one anteriorly directed loop. The viscera show spiral torsion. Formerly the generic name Agriolimax Morch, 1865, was employed instead of Deroceras.

DEROCERAS AGRESTE (LINNAEUS), 1758

Range: A palaearctic species which has been introduced into every temperate region occupied by European peoples. It was early introduced into the United States and is now widely distributed. In many localities this slug is a serious pest to garden and field crops. It is the most abundant, as well as, widely distributed of our slugs.

This slug varies from 35 to 50mm in length. The color is highly variable. The ground color is usually buff or some shade of gray. There are usually darker gray or black spots irregularly arranged. Numerous color forms have been described. These color forms bear no relation to the variations of internal anatomy. I see no value in making distinctions in color forms of a species where these forms vary with imperceptible intergradations. The mantle is marked with closely concentric striae and the back with elongate tubercles. The posterior tip of the tail is keeled. The tail is pointed. The sole is distinctly tripartite. The slime is normally clear and colorless but when handled roughly or otherwise annoyed they exude an abundance of milky white slime. This white color is due to the presence of calcium carbonate particles.

Internally the species is characterized by the many lobed penial gland and by the presence of a rectal caecum. The penial gland varies greatly. There is absolutely no relation between the numerous color forms and the variation of the penial gland.

DEROCERAS GRACILIE (RAFINESQUE), 1820.

Range: Thought to be quite generally distributed over North America.
This slender little fellow is seldom longer than 20 to 25 mm in length. A number of color variations have been noted. It varies from buff to almost black. Specimens which I have verified by dissection were of a light slate color with a gelatinous appearance. The slime is clear and uncolored. When alive, concentric striae may be noted on the mantle with elongate tubercles over the back.

This is the Agriolimax campestris (Binney, 1841) of most authors. Junius Henderson lamented that a name in common usage for so many years should have to give way to one with which we were all unfamiliar. Taylor considered it a subspecies of Deroceras laeve (Muller) and some American authors have followed this opinion. Baily states it is probably not distinct from D. laeve. DEROCERAS LAEVE (MULLER, 1774), a European species has been introduced into California and is to be found from the San Francisco Bay region south at least as far as Salinas. It is very common in Golden Gate Park, San Francisco. It is larger and proportionately broader than D. gracile. The tail of gracile is tapering and pointed when viewed in profile. The tail of a fully adult D. laeve when viewed in profile is truncate or chisel-shaped. There are very definite differences when examined internally. The penis of D. gracile is spiral in form while that of D. laeve is hammer-shaped with three or four tubular glands.

Genus MILAX GRAY, 1855. A single species of this palaearctic genus has been reported from the Pacific coast.

MILAX GIGATES (DRAPARNAUD) , 1801

Range: Originally ranged from the Mediterranean region north to the Netherlands and Scotland, but now has become established in all temperate regions inhabited by Eurppean peoples. It is found on the west coast from Washington to San Diego, Calif. In 1872, Cooper reported it as " exceedingly numerous in every garden" in San Francisco. Thinking it to be distinct from the European form he named it Limax (Amalia) Hewstoni.

This slug, usually an inch to an inch and a half long, is of a black or gray color. Specimens of yellowish and reddish gray have been reported. In Europe it is said to have a far wider range of color variation.

Milax is characterized by a single oval or diamond shaped groove centered on the mantle. This groove is generally more heavily pigmented. The surface of the mantle has a granular appearance. No suggestion of concentric striae is preset. The keel is very sharp and extends the full length of the back behind the mantle. When the animal is contracted the keel is elevated above the level of the mantle. The sole is distinctly tripartite.

Family *ARIONIDAE*

The jaw of *Arionidae* is odontognathous. There are several vertical ribs which give the cutting edge a toothed appearance. No introduced species of Arionidae have been reported from Los Angeles or Orange counties. The past several months of search has brought to our knowledge the presence of two species of native slugs of this family not previously known to be in these counties.

ANADENULUS COCKERELLI (Hemphill), 1890.

Range: Lose Angeles, Orange and San Diego counties, Calif. When origihally described the type locality was given as Cuyamaca Mts., San Diego County, Calif. Hemphill's types, now in the California Academy of Sciences are indicated as being from " Julian, San Diego County, Calif.". For over fifty years *Anadenulus* was known only from the type lot originally collected by Henry Hemphill. The writer announces the following additional localities: Upper Millard Canyon, San Gabriel Mts., Los Angeles County; Calbaden Canyon, Puente Hills, Los Angeles County; Carbon Canyon, Puente Hills, Los Angeles County; Limestone Creek above Santiago Reservoir, Orange County.

This species bears a superficial resemblance to a small specimen of *Prophysaon andersoni* but the tripartite sole of *Anadenulus* is sufficient for easy recognition. One specimen which the author measured was 28mm when fully extended. A specimen in alcohol measures 20 mm. The color varies. Some individuals are nearly black. Young specimens are generally darker than adult specimens. There are generally two undulating longitudinal stripes on the mantle. These may be bordered on either side by black stripes. In a specimen from Millard Canyon the outer black stripes are conspicuous with the area between the two yellow stripes only slightly darker than the yellow stripes themselves. The distinct dorsal keel is lighter in color than the rest of the back and in some individuals there is a definite dorsal stripe. The distinctly tripartite sole is irregularly dotted with black. These black dots are more numerous along the longitudinal grooves which separate the median area of the sole from the lateral areas. The breathing pore is located at the middle of the right side of the mantle.

HESPERARION HEMPHILLI (Binney), 1876 Range: Previously known only from Alameda and San Mateo Counties, the writer has found it to be quite widely distributed in the wooded canyons in Los Angeles and Orange Counties. Southern Calif. localities are: Elysian Park, Los Angeles; Arroya Seco, Millard and Santa Anita A Canyons, San Gabriel Mts., Los Angeles County/ Santa Ana, Black Star, Silverado and Trabuco Canyons, Santa Ana Mts., Orange County.

Farther north *Hesperarion niger (Cooper), 1872* , also known as *Ariolimax niger* , is found from Colusa County south to Monterey County. *H. hemphilli* is more elongate and slender than *H. niger* . Internally *niger* is characterized by a digitiform atrial appendix which is absent in *hemphilli*. The genus is characterized externally by a caudal mucous pore which is a conspicuous open slit.

A SURVEY OF WESTERN NORTH AMERICAN MARINE MOLLUSCS

edited by

Beatrice L. and Thomas A. Burch

The Conchological Club of Southern California has collected from Alaska to Mexico. This is the first of a series of papers to correlate the material taken from the marine trips of the organization. We propose to incorporate data from our records to include the following:

1. Complete synonomy of each species. Many members do not own, or have available Grant and Gale's " Catalogue of the Pliocene and Pleistocene Mollusca of California" which is so helpful. The synonomy records are largely taken from this volume.
2. Occurance in local Pleistocene deposits, taken from our records as well as others.
3. Recent range, taken from our records.
4. Depths at which specimens occured .
5. Type of substrate upon which specimen was found.
6. State of shell, whether alive, dead, adult, young.
77. Any natural history note.

We hope this will prove of interest to the readers of the minutes of our organization. We further hope you will help us critically by writing to the editor of the minutes (John Q. Burch) comments on the manner of presentation, type of material included and further information on any species you wish included. We are especially desirous to obtain notes on natural history.

From time to time we plan to present information on certain families or genera. This time we review the Tellinidae. The next paper will outline the system of classification which will be followed with a brief description of the anatomical features upon which it is based. Also, the Fissurellidae will be discussed. Any natural history information or other comment on this group will be appreciated.

TELLINIDAE

INTRODUCTION

Each coast of the Americas has over 50 species of Tellinidae, the Pacific coast being slightly richer, especially in the genus Macoma.

Pelecypods, being creatures usually living in moderate depths, are well suited to give indications of faunal relations as modified by geological changes. Study of species that are common to both coasts and those represented by closely related analogues indicate for our Tellinidae a separation dating from some time in the Miocene. This is what we learn from the geology of the Middle American region in which are the last marine beds of any general extent belonging to the Oligocene. The absence of marine Miocene from the whole of this region leads to the belief that the land surface was above the ocean during this epoch.

If there has been a connection between the two oceans since the upper Oligocene, it did not lead to any important interchange of animal life, nor prevent the northward migration of Southern and Middle American vertebrates and freshwater molluscs into the continent of North America.

The boreal species are practically common to the two oceans, as is an overwhelming proportion of the whole arctic and boreal fauna, though largely mixed toward the south with the fauna of the temperate regions which is distinct.

As the Tellina inhabit mostly the eulittoral to just below the sub-littoral (0-75), their distribution in latitude is not remarkable. A few species like Macoma carlottensis Whiteaves and one species Macoma leptonoidea Dall, is found in shallow water off the coast of California, though is not known near shore (Dall, 1900). It may be a relic of the time when the cold northern current, passing through the Suwanee Strait (now the neck of the peninsula of Florida), carried a number of cold-water types to the northern shores of the Gulf of Mexico. Several of these species have accomodated themselves to circumstances and still survive.

* Genus Tellina Linnaeus, 1758 *

The shell is slightly inequivalve, compressed, rounded in front, angular and slightly folded posteriorly, umbones sub-central. The pallial sinus is very wide and deep, the ligament is external and prominent. Teeth 2,2; laterals 1,1.

This genus has been divided into three groups on the basis of lateral teeth by Dall.

a. Hingewithout 2 lateral laminae in each valve --
   sub-genus Tellina ex. T. idae
b. Hinge without 2 lateral laminae in the right valve, the lamina of the left valve obsolete or absent.--
   sub-genus Merisca ex. T. declivia
   sub-genus Moerella ex. T. salmonea
c. Hinge without single strong right anterior lateral laminae, the other laterals absent.
   sub-genus Angulus ex. T. carpenteri
   sub-genus Oudardia ex. T. buttoni
   sub-genus Peronidia ex. T. bodegensis

Some of the species in this last group are confusing, such as Tellina bodegensis Hinds 1844 and Tellina santarosae Dall 1900 . We think they grade into each other and so are probably one species; the more delicate form, Tellina santarosae grading into the northern, more sturdy T. bodegensis. Another confusing group is that of T. carpenteri Dall 1900, T. modesta (Carpenter) 1863, and T. buttoni Dall 1900. The main difference between the three forms being the presence of a ray behind the anterior adductor scar in T. buttoni, T. carpenteri lacking such a ray and T. modesta is intermediate between the forms. T. modesta and T. buttoni may be varieties of the same species. If so, the variety would be T. modesta var. buttoni.

Tellina idae Dall, 1891

Proc. U.S. Nat. Mus., Vol. 14, p. 183, pl.6, fig.3, pl.7, figs.1,4,1891; Williamson Vol. 15, p. 185, 1892; Cooper, Calif. State Mining Bureau, Bull. 4, p. 32, 1894;Dall, Proc. U.S. Natl. Mus., Vol. 23, p. 301, pl.4, figs. 10,11,1900; Arnold, Vol. 32, p. 527, 1907; English, Univ. Calif. Publ. Geol., Vol.8, p210 1914; Dall, Bull. 112, U.S. Natl. Mus., p. 45, 1921; Dall in Orcutt, West Amer. Scientist, Vol. 19, No.2, p. 19, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol. Vol. 1, p. 164, pl. 14, fig.4, 1924.

Tellina (Angulus) idae Dall, Arnold Mem. Calif. Acad. Sci. Vol.3, pp 158,159, pl. 15, fig.6 (not fig.7), 1903.

Tellina nevadensis Anderson and Martin, Proc. Calif. Acad. Sci. Ser.4,p. 61, pl. 2, figs. 32-c, 1914.

Tellina englishi Clark, Univ. Calif. Publ. Geol. Vol.8, p. 472, pl. 61, figs. 6,7, 1915. ?

Type Locality: Long Beach, Los Angeles County, Calif.

Type specimen: In the U.S. National Museum

Pleistocene: San Pedro; San Quintin Bay, west coast of Lower Calif., Mexico; Baldwin Hills, Del Rey, California.

Recent: Redondo Beach, Calif. 12/1937 25 ftms. and 50 ftms. young and adult; San Pedro, along a sand sprit reaching from 5th St. Ferry landing to the south end of Mormon Island, 1918; San Pedro, inside the breakwater in 1918; Newport Bay, 10/1935 and in 2/1943 few adults, no young; Santa Barbara Islands and Catalina Island.

Comment: It is found in sand, is not found commonly and only a few at a time. As Mr. George Willett says, the San Pedro material is always difficult to identify from dead shells. So much fossil material washed out into the bay that it is never certain whether it is fossil or simply dead recent material.

Young specimens are equilateral and triangular shaped with much coarser sculpture than the adults.

Tellina (Merisca) declivia Sowerby, 1868

Type locality: Unknown to us.

Pleistocene: ?

Recent: Dall in Bull. 112 lists the range Catalina, California to Panama.

Comment: Not collected by the Burches, not known to Mr. George Willett or Mr. A.M. Strong.

Tellina (Merisca) reclusa Dall, 1900

Proc. U.S. Nat. Mus., Vol. 23, p. 315, pl.3, fig.2, 1900; E.K. Jordan, Bull. So. Calif. Acad. Sci., Vol. 23, p. 151, 1924.

Type specimen: In the U.S. National Museum, Cat. No. 105,513.

Type locality: San Ignacio Lagoon, Lower California, Mexico; Recent

Pleistocene: Upper Quaternary of San Ignacio Lagoon, Lower Calif., Mexico (

Recent: San Ignacio Lagoon to Gulf of California(Dall).

Comment: Dall (1900) states that this species is notable for the rasp-like quality of its surface to the touch.

Tellina (Moerella) salmonea (Carpenter) 1863

Maera salmonea Carpenter, Brit. Assn.Adv. Sci., Rept. for 1863, p. 639, 1864; Ann. Mag. Nat. Hist., Ser. 3, Vol. 14, p. 423, 1864.

Tellina (Moerella) salmonea Carpenter, Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 302, 1900; Arnold, Mem. Calif. Acad. Sci.,Vol.3, p. 157, pl. 13, fig.7, 1903; Dall, Bull. 112, U.S. Nat. Mus., p. 45, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol. Vol. 1, p. 165, pl. 44, figs. 3a-b, 1924; T.S. Oldroyd, Proc. U.S. Nat. Mus. Vol. 65, Art.22, p.6, 1925. Clark, Univ. Calif. Publ. Geol, Vol.8, p 420,1915.

Type locality: Vancouver Island, British Columbia.

Pleistocene: San Pedro, California

Recent: Unalaska Island, Alaska, Nov. 1935; Umnak Islands; Sitka, living adults; Forrester Island, Alaska, young, alive; Pacific Grove, Monterey, Calif. Aug. 1937 in 15 ftms.; San Pedro, Calif. adults found before 1922; South Coronado Islands, Mexico, dredged young; San Francisco Bay, 1911, 6¼ to 16 ftms. in sand and gravel.

Comment: Before 1922 a number of specimens were taken from San Pedro Bay. This seems to be one of quite a number of species which Mr. A.M. Strong found before the dredging and filling operations. These species have not been found elsewhere in the local waters since they were killed off by the changing conditions.

Tellina (Moerella) meropsis Dall, 1900

Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 317, pl. 3, fig.1, Nov.,1900; Bull. 112 U.S. Nat. Mus., p. 45, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol.1, p 166, 1924; Waterfall, Univ. Calif. Publ. Geol., Vol. 18, p. 78, 1929.

Grant and Gale " Pliocene and Pleistocene Mollusca of Calif." p 359, pl. 14, figs. 9a,9b, pl. 20, figs. 9a,9b;

Tellina gouldi Hanley of Carpenter and of some Pacific coast collectors; not of Hanley.

Tellina meropsis Dall, Stephens,Trans. San Diego Soc. Nat. Hist., Vol. 5, no. 16, pp 250, 253, 1929.

Type specimen: In the U.S. National Museum, Cat. No. 123,410

Type locality: San Diego, Calif.; Recent.
Pleistocene: " Saugus" formation, Ventura; Mission Bay, San Diego County; Newport, Calif.; "Anomia Bed", Vermont Ave., Los Angeles, Calif.
Recent: San Diego; La Jolla, April, 1935.
Comment: Very little is known about this species.

Tellina (Angulus) carpenteri Dall, 1900

Proc. U.S.Nat. Mus., Vol. 23, p. 303, 1900; Bull. Mus. Comp. Zool., Harvard Coll. , Vol. 43, p. 421, 1908; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 166, pl. 44, figs. 10a-b, pl. 29, fig 2, 1924; T.S. Oldroyd, Proc. U.S. Nat. Mus. , Vol. 65, Art.22, p.7, 1925.
Grant and Gale " Pleiocene and Pleistocene Mollusca of Calif." p. 361.
Tellina carpenteri Dall, Packard, Univ. Calif. Publ. Zool., Vol. 14, p. 276,pl. 25, fig. 10, 1918; E.K. Jordan, Bull. So. Calif. Acad. Sci., Vol. 23, p. 149, 1924; Proc. Calif. Acad. Sci., Ser. 4, Vol. 15, p 244, 1926.
Angulus variegatus Carpenter, Brit. Assn. Adv. Sci., Report for 1863, pp. 611 627, 639, 1864; Ann. Mag. Nat. Hist., Ser.3, Vol. 14, pp. 423, 424, Dec. 1864; not Tellina variegata Gmelin, 1792.
Type locality: Neah Bay; Recent.
Pleistocene: Timm's Point, San Pedro, Calif.; " Anomia Bed", Vermont Ave., Los Angeles, Calif.; Lower San Pedro fauna of Nob Hill cut, San Pedro (T.S. Oldroyd); lower Quaternary of Magdalena Bay, Lower California(Jordan 1924); upper Pleistocene of San Quintin Bay, Lower Calif., Mexico (Jordan, 1926).
Recent: Collected in all bays and dredged from all types of substrata down to 100 ftms.; Monterey, Calif. 8/1937, 40 ftms.; Mugu, Ventura Co., Calif. 5/1937, sandy mud in lagoon; Santa Monica, 9/1936, have no pink in them as have the typical specimens; Redondo Beach, Calif., whenever and wherever dredged down to 100 ftms. ; Anaheim Bay, 5/1936, were spawning at low tide mark in summer; Alamitos Bay, 6/9/1940, fine sand, even in mud; Newport Bay, 11/1935, 4/26/43 (freshly dead); Mission Bay, 1936; Ensenada, Mexico, 10/1936; Estero below Ensenada, Mexico, 1936, in sand; Avalon, Catalina Id., dredged 25 ftms. in sand 8/1937; Forrester Island, Alaska, to Gulf of California, Mexico (Dall, 1921) ; Panama, Dall 1908).
Comment: Resembles T. modesta and T. buttoni. It is glossy, flat, narrow, hardly ½ inch long (Keep). It can be distinguished from T. buttoni by the absence of a ray behind the anterior muscle scar. There is a slight difference in sculpture The T. buttoni has a blunter posterior end. The color ranges from white, pink stripes, through solid pink, even purplish. Many collectors note that they find specimens lacking in pink, but the Burches find many colored forms. Mud bank forms are usually pink and smaller than the sand forms. Mr. George Willett notes that the Forrester Island, Alaska, specimens are more striped and of a muddy yellow with rays.
This species is amazingly common when found. To quote from A.M. Strong, 1922, " This species is to be found in large numbers in the shallow water of the upper portions of the tide channels at Anaheim Bay, living just under the surface of the black ooze. It is also dredged in Catalina Harbor (CEW & AMS). Formerly (before 1920) plentiful in San Pedro Bay (Tremper).

Tellina (Angulus) panamensis Dall, 1900

Type locality: Not known to us.
Pleistocene: ?
Recent: Range is listed from Catalina to Panama. The source of the Catalina listing is not known to any member of the club.

Tellina (Oudardia) modesta Carpenter, 1864

Grant and Gale " Pliocene and Pleistocene Mollusca of California" , p. 361.
Angulus modestus Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, pp 602, 639, 681, 1864; Proc. Acad. Nat. Sci. Phila. for 1865, p. 54,; Dall, Bull. 112, U.S. Nat. Mus. p. 45, 1921. Tellina modesta Carpenter, E.K. Jordan, Bull. So. Calif. Acad. Sci., Vol. 23, p. 151, 1924.

Tellina (Angulus) modesta Carpenter, Dall, Proc. U.S. Nat. Mus. Vol. 23, p 304 1900; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 167, 1924.
Type locality: Not known to us.
Pleistocene: Upper Quaternary of San Ignacio Lagoon, Lower Calif., Mexico, (Jordan); " Anomia Bed", Vermont Ave., Los Angeles, Calif.
Recent: Vancouver Island, British Columbia, to Lower Calif., Mexico(Dall,1921). Avalon, Catalina Island, Calif. 8/1937 35 ftms.; Monterey, Calif. 8/1940, 20 ftms. shale bottom; Santa Monica, Calif. 1935; Redondo Beach, Calif. 12/1937, 25 ftms.; Malaga Cove, Los Angeles County, 1936 in 15 ftms.
Comment: This is a typical sand shell, found only by dredging. The shell is small, white, rather short, with a thick but rather obscurely defined ray behind the anterior adductor scar. The Burches have dredged some specimens off Santa Monica, Calif., which appear to be intermediate between T. modesta and T. buttoni, therefore these may be but varieties of the same species. Dall placed this species in the subgenus Angulus which does not have an internal rib even though the species is described as having an internal rib. It seems clear that T. modesta should be placed in the sub-genus Oudardia.

Tellina (Oudardia) buttoni Dall, 1900

Grant and Gale, " Pliocene and Pleistocene Mollusca of Calif." p 361. Tellina pedroana Conrad, ? , U.S. Pacific R.R. Reps., Vol. 5, p. 323, pl. 3, fig. 17, 1855. ? Macoma pedroana Conrad, Gabb, Geol. Surv. Calif. Palaeo., Vol. 2, pp. 94, 124, 1868-9; Cooper, 7th Ann. Rept. Calif. State Mineralogist, p. 248 1888. Angulus ? var. obtusus Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 639, 1864, not Tellina obtusa Sowerby, Min. Conch., Vol. 2, p. 175, pl. 179, fig. 4, 1818. Tellina (Angulus) var. obtusus Carpenter, Proc. Acad. Nat. Sci. Phila., p. 56, 1865, not Tellina obtusa Sowerby, 1818. " Angulus modestus Carpenter" of some early California collectors, not of Carpenter, 1864. Tellina (Oudardia) buttoni Dall, Proc. U.S. Nat. Mus. Vol. 23, p 304, pl. 4, figs. 12, 13, Nov. 14, 1900; Trans.Wagner Inst. Sci., Vol. 3, p. 1036, pl. 47, fig. 18, Dec. 1900; U.S. Nat. Mus. Bull. 112, p. 46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol. Vol. 1, p. 167, pl. 44, figs. 7a-b, 1924; T.S. Oldroyd, Proc. U.S. Nat. Mus., Vol. 65, Art. 22, p. 7, 1925; Waterfall, Univ. Calif. Publ. Geol., Vol. 18, p. 78, 1929. Tellina (Angulus) buttoni Dall, Arnold, Mem. Calif. Acad. Sci., Vol. 3, p. 157, pl. 15, figs. 2 & 9, 1903, not pl. 16, figs. 1 & 2. Tellina buttoni Dall, Jordan, Proc. Calif. Acad. Sci. Ser. 4, Vol. 15, p 244 1926; Stephens, Trans. San Diego Soc. Nat. Hist. Vol. 5, p. 252, 1929. Tellina buttoni Dall, Willett, Trans. San Diego Soc. Nat. Hist. Vol. 8, p 390, 1937.
Type specimen: In the U.S. National Museum, No. 42, 865a.
Type locality: Guadalupe Island, Lower California; Recent.
Pleistocene: Lower San Pedro of Deadman Island and San Pedro bluffs; near Ventura; San Diego; upper Pleistocene of San Quintin Bay, Lower,Calif., Mex.; Anomia Bed", Vermont Ave., Los Angeles; Centinella gravels, Del Rey, Baldwin Hills (Willett).
Recent: Lituya Bay, Alaska, to Gulf of California, Mexico (Dall, 1921). Forrester Island, Alaska(Geo. Willett); Morro Bay, Calif. 10/1936, 1/1937, and 5/23/1940 on sandy shore; Cayucos, Calif. 1940; Monterey, Calif. 8/1937 at 10 ftms., 25 ftms. and 8/1940 20 ftms. on shale bottom; Mugu, Ventura Co., 12/1937 from sand bar; Redondo Beach, Calif. 12/1937 at 25 ftms.;
From A.M. Strong, 1922 we find that these were formerly to be found in large numbers at the westerly end of Terminal Island (Tremper). A number of specimens washed up on the Terminal Island beach after a storm (E.P. Chace). Quite a number of specimens dredged in Catalina Harbor and Isthmus Cove in sandy mud at about 3 ftms.
Comment: The shell is white, the surface concentrically grooved with the sculpture stronger on the right valve anteriorly. There is a well thickened ray behind the anterior adductor scar.
Type specimen: In the U.S. Nat. Museum, No. 42,865a

Tellina (Peronidia) lutea Gray, 1828

Index Testac., Suppl., pl.1, fig. 3c, 1828, fide Dall, 1900; Grewingk, Russisch-Kaiserliche Mineralogische Gessell. zu St. Petersburg, Verhandlungen for the yrs. 1848 and 1849, p. 359, 1850; Carpenter, Brit. Assn. Adv. Sci. Rept. for 1856, pp. 219, 221,301, 1857; Rept. for 1863, p. 9, 1864; not " Tellina lutea Gray" Krause, Archiv. f. Naturg. for 1885, p. 37. Tellina alternidentata Broderip & Sowerby, Zool. Journ., Vol. 4, pt. 15, p. 363, 1829(possibly Oct., 1828); Sowerby, Zool. Voy. Blossom (Captain Beechey's Voy.) p. 153, pl. 44, fig.5, 1839; Dall, U.S. Geol. Surv. 17th Ann. Rept., pt. 1, p. 845, 1896. Tellina guildfordiae Gray, in Griffith's Cuvier, Vol. 12, pl. 19, fig.2, 1834, fide Dall, 1900. Tellina venulosa Schrenck ?, Bull. Acad. Imp. Sci. p. 411, 1861; Reise in Amurl.,Moll. p 556 , pl. 22, figs. 2-5, 1867, fide Dall, 1900. Tellina (Peronidia) lutea Gray, Dall Proc. U.S. Nat. Mus., Vol. 23, p 322, pl.4, figs. 15,16, 1900; Dall, Wash. Acad. Sci., Alaska, Res. Harriman Alaska Exped., Vol. 4, p. 116, 1904, reissued by Smithsonian Inst., 1910; Dall, U.S. Nat. Mus., Bull. 112, p. 46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 169, pl. 1, fig 9, 1924.

Type locality: Icy Cape, Arctic Ocean.

Pleistocene: ?

Recent: Arctic Ocean, Bering Sea, north Japan, the Aleutian Islands and east to Cook's Inlet, Alaska (Dall, 1921).

Unimak Island and Kodiak Island, 1926 (George Willett); Kukak Island, Alaska, 3/15/36 (G. Willett); Afognak Island, 1922 on sandy beach (W.J. Eyerdam.)

Tellina (Peronidia) bodegensis Hinds, 1844.

Zoology Voy. Sulphur, Mollusca, p. 67, pl. 21, fig.2, 1844; Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 639, 1864; Cooper, 7th Ann. Rept. Calif. State Min. p. 267, 1888; Keep, West Coast Shells, p. 197, fig. 169, 1888, 1892; Williamson, Proc. U.S. Nat. Mus., Vol. 15, p. 185, 1892; Dall, Vol. 23,p. 320, pl.4, figs. 12,13, 1900; Trans. Wagner Inst. Sci., Vol. 3, p. 1029, 1900; Martin, Univ. Cal. Publ. Geol.,Vol. 9, p. 254, 1916; Nomland, Vol. 10, table opp. p 320, 1917; Weymouth, Calif. Fish and Game Comm. ,Fish Bull. No. 4, p. 42, pl. 11, fig.1, 1920; Jordan, Bull. So. Calif. Acad. Sci. Vol. 23, p. 149, 1924; Proc. Calif. Acad. Sci., Ser.4,Vol.15, p. 244, 1926; Stephens, Trans. San Diego Soc. Nat. Hist., Vol.5, p. 251, 1929. Tellina (Angulus) bodegensis Hinds, Arnold, Mem. Calif. Acad. Sci. Vol.3, p. 158, pl. 15, fig.7 (not fig.8),1903. Tellina (Peronidia) bodegensis Hinds, Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 304, 1900; U.S. Natl. Mus. Bull. 112, p. 46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 168, pl. 44, fig.5, 1924; Waterfall, Univ. Calif. Publ. Geol., Vol. 18, p. 78, 1929.

Tellina bodegensis Hinds, Willett, Trans. San Diego Soc. Nat. Hist., Vol.8, p. 390, Dec. 15, 1937.

Type locality: Bodegas Bay, California; Recent.

Pleistocene: San Pedro to San Diego, California; San Quintin Bay, Lower Calif. Centinela gravel, Baldwin Hills, Del Rey, Los Angeles Co.

Recent: Queen Charlotte Islands, British Columbia, to Gulf of California, Mexico; questionably Japan (Dall, 1921)

Morro Bay, Calif. just beyond breakwater, June, 1935, adult alive; Crescent City, Calif. (E.P. and E.M. Chace); Pacific Grove, Calif. Aug. 1937, 15 ftms., one alive, others dead, in sand; Bennett's Slough, Monterey, Calif. 1927, adults alive; Santa Cruz Island, young forms dredged in 10 ftms.; Terminal Island, San Pedro, Calif. (by Mrs. W.H. Eshnaur) before the dredging of Deadman Island, alive; Anaheim Landing, Calif., one valve; Coronado Beach, San Diego, shore.

Comment: This is a beautiful species but difficult to distinguish from Tellina santarosae Dall. The editors believe that the two are synonomous; T. santarosae the more southern form. Further discussion of these species is included under T. santarosae.

MacGinitie notes (1935) that Tellina bodegensis has long, split siphons and that the incurrent one is much longer than the excurrent one. Portions of the siphons often autotomize when the clam is disturbed. In the slough in which he worked, he found that if the species were left exposed too long by a low tide, they come to the surface in search of water and remain at the surface. Mr. and Mrs. E.P. Chace note that T. bodegensis crawls on edge just below the surface of the sand leaving a slit-like groove.

This species is found in bays in shallows, and also in deep water. Older forms show a tendency to thicken the shell from the inside.

Mr. George Willett believes that T. bodegensis and T. santarosae are not identical, but just similar.

Tellina (Peronidia) santarosae Dall , 1900

Proc. U.S. Nat. Mus. Vol. 23, pp. 305, 321, pl. 3, fig.6; pl. 4, figs. 1,2,1900. Willett, Trans. San Diego Soc. Nat. Hist., Vol. 8, p. 390, 1937.

Pleistocene: Centinella Gravel, Del Rey, Baldwin Hills, Calif. (Willett).

Recent: Santa Barbara Islands to San Diego (Strong, 1922).

Living specimens taken with T. idae at the time of the first dredging in San Pedro Bay (Mrs. W.H. Eshnaur); formerly plentiful on the ocean side of Terminal Island (Tremper); Anaheim Landing, 1937, living specimens; Ensenada, Lower California, Mexico, June 1938, many dead along the sandy beaches.

Comment: This species is flat, thin and less bent posteriorly than T. bodegensis . Also, on the typical T. santarosae, the posterior fourth of the right valve has much narrower interspaces which are elevated. The left valve sculpture is more feeble than on the right. It never seems to thicken on the inside of the shell as does a typical old T. bodegensis. Thus, the southern form, T. santarosae, seems to be so similar to the more northern T. bodegensis that it is exceedingly difficult to separate them especially in these local regions in which they tend to overlap.

Tellina (Eurytellina) rubescens Hanley, 1844

Proc. Zool. Soc. London for 1844, p.60, 1844; Sowerby, Thes. Conch. Vol.1, Tellina, p. 242,pl. 50, fig. 153, 1846; Dall, Proc. U.S. Nat. Mus. Vol. 37, p.270, 1909; E.K. Jordan, Bull. So. Calif. Acad. Sci. Vol, 23, p. 149, 1924.

Tellina simulans C.B. Adams, Ann. Lyc. Nat. Hist. N.Y., Vol. 5, p 508, 1852; Romer, in Martini und Chemnitz, Conch. Cab. Ed.2, Tellinidae, p. 99, pl. 25, figs. 4,5, 1871; Bertin, Nouv. Archiv. Mus. Paris, Ser.2, Vol.1, p. 259, 1878. " Tellina punicea Born", Carpenter, Cat. Reigen Coll. Mazatlan Moll. Brit. Mus. p. 35, 1857, not of von Born, 1780; Reeve, Conch. Icon. Vol. 17, Tellina, pl. 12, fig. 53, 1866; fide Lamy, 1909. Tellina (Eurytellina) rubescens Hanley, Dall Proc. U.S. Nat. Mus., Vol. 23, p. 302, 1900; Lamy, Journ. de Conchyl., Vol. 57, p. 251, 1909. Tellina (Angulus) rubescens Hanley, Arnold, Mem. Calif. Acad. Sci. Vol.3, p. 159, pl. 15, fig.8 (not fig. 9 as given), 1903.

Type locality: ?

Pleistocene: Magdalena Bay, west coast of Lower California, Mexico. San Pedro.

Recent: Puntarenas , Sonora, Mexico; Almejas Bay , Lower California, Mexico.

Comment: Not known by members of the club.

* Genus — Apolymetis Salisbury, 1929 *

Proc. Malac. Soc. London, Vol. 18, p. 258, Nov. 1929 (new name for Polymetis). Capsa sp., Bruguiere, Encycl. Meth., Vol. 1, pl. 231, figs. 1a-c, 1797, not the type. Capsa Lamarck, Mem. Soc. Hist. Nat. Paris, Vol. 1, p. 84, 1799; not Capsa Humphrey, 1797, nor of Lamarck, Syst. Nouv. Class., p. 126, 1801, nor of Lamarck Anim. s. Vert, Vol. 5, p. 553, 1818, fide Dall, Dec. 1900. Capsa Bosc., Hist. Nat. Coq. p. 18, 1802, err. pro Capsa. Metis H. & A. Adams, Gen. Rec. Moll., Vol. 2, p. 399, Nov. 1856, not of H.& A. Adams, op. cit. p. 436, March,1857— Myrsus H.& A. Adams,corrigenda, p. 660, Nov. 1858; Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 292, Nov. 1900; Trans. Wagner Inst. Sci. Vol. 3, pp. 1039-1041, Dec., 1900; not Metis Philippi, Archiv.f. Naturg., Vol.9, p.59,1843; nor Metis Gistel,Naturg.

Thierr. f. Hoh. Schul., p. 174, 1848. " Lutricola Blainville", Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 639, 1864, not of Blainville, Man. Malac. Vol. 1, p. 566, 1825. Polymetis A.E. Salisbury, Proc. Malac. Soc. London, Vol. 18, p. 255, July 15, 1929, new name for Metis; not Polymetis Walsingham, 1903. Apolymetis biangulata (Carpenter), Willett, Trans. San Diego Soc. Nat. Hist., Vol 8, p. 390, 1937.
Type: (by monotypy), Tellina meyeri Phil" -- Tellina meyeri Dunker, fide Philippi, Abbild. Beschreib, Conchyl., Vol.2, Tellina, p. 89, pl.4, fig.1, Aug. 1846; East Indies.

The genus is described as not having lateral teeth. Therefore "x" in the drawing is not a lateral tooth, but is a lamina which extends the plate to which the ligament attaches centralward. This is shown in the drawing of the hinge looking down from above the umbone.

Apolymetis biangulata (Carpenter), 1855

Grant and Gale, " Pliocene and Pleistocene Mollusca of California", p 363, Pl. 20 fig. 16. Tellina alta Conrad, Journ. Acad. Nat. Sci. Phila. Vol.7, p. 258, 1837; Hanley in Sowerby, Thes. Conch., Vol. 1, p. 332, pl. 62, fig.200, 1847; not Tellina alta Conrad, Fossil Shells of the Tertiary Formations of North America, Vol. 1, no.4, p. 41, Phila. 1833. Scrobicularia biangulata Carpenter, Proc. Zool. Soc. Lon., Pt. 23, pp. 213, 230, 1855; Brit. Assn. Adv. Sci. Rept. for 1856, p. 195, 1857. Arcopagia medialis Conrad, Proc. Acad. Nat. Sci. Phila., Vol. 8, p. 314, Dec. 1856; U.S. Pac. R.R. Reps. Vol. 6, Pt. 2, p. 70, pl. 2, fig. 6, 1857; Dall, U.S. Geol. Surv., Prof. paper 59, p. 174, 1909, reprint of Conrad 1856. Scrobicularia biangularis Carpenter, Brit. Assn. Adv. Sci. Rept. for 1856, p. 303, 1857, err. pro biangulata. Arcopagia unda Conrad, ? U.S. Pac. R.R. Reps. Vol.7, p. 192, pl. 4, figs. 3,4, 1857; type specimen No. 13,328, U.S. Nat. Mus. Lutricola alta Conrad, Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 639, 1864; Journ. de Conchyl., Vol.12, p 133, 1865; Cooper, 7th Ann. Rept. Calif. State Mineralogist, p. 247, 1888; Keep, West Coast Shells, p. 197, 1888, 1892; Williamson, Proc. U.S. Nat. Mus. Vol. 15, p. 186, 1892. Metis alta Conrad, Dall, Pro. U.S. Nat. Mus., Vol. 23, p. 306, 1900; Trans. Wagner Inst. Sci., Vol.3, p. 1044, 1900; Arnold, Mem. Calif. Acad. Sci., Vol.3, p. 160, 1903; U.S. Geol. Surv. Bull. 309, pp 24,26,107, 1907; Bull. 396, pp. 17, 24,25,118, pl. 6, fig. 1, Jan 15, 1910; Bull. 398, pl. 28, same fig., 1910; Kew, Univ. Calif. Publ. Geol., Vol.8, p.46, 1914; Clark, Vol.8, p. 418, 1915; Nomland, Vol.10, pp.214, 219, 300-304, 1917; Dall, Nautilus, Vol. 32, p.24, 1918; Weymouth, Calif. Fish & Game Comm., Fish Bull. No.4, p.42, pl.11, fig.2, 1920; Dall, U.S. Nat. Mus. Bull 112, p. 46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol.1, p. 169, pl. 57, fig.3, 1924; Jordan, Bull. So. Calif. Acad. Sci., Vol.23, p. 149, 1924; T.S. Oldroyd, Proc. U.S. Nat. Mus., Vol. 65, Art.22, p.7, 1925; Jordan, Pro. Calif. Acad. Sci., Ser. 4, Vol.15, p.244, 1926; Willett, Trans. San Diego Soc. Nat. Hist., Vol.8, p.390 1937.
Pleistocene: San Pedro, Ventura, San Diego, Magdalena Bay, and San Quintin Bay, Lower, Calif.
Recent: Santa Barbara to San Diego, Calif. (Dall, 1921); formerly plentiful around Terminal Island (Tremper); also from A.M. Strong, 1922, " valves not uncommon on the beach at Terminal Island in 1912 or 1913. These may have come from the dredging in San Pedro Harbor. I have taken a few small ones at different times in Anaheim Bay (E.P. Chace)." Redondo Beach, Calif. 6/11/38 dredged in gravel at 25 ftms.; Terminal Island, 1930; Anaheim Bay; Huntington Beach, dead valves by the hundreds, living specimens small and few; San Diego, alive by Dr. Fred Baker; Newport Bay in 1937, dug from fine sand about 6" deep, about 20 specimens; Mugu, Ventura Co., Calif. 5/4/37, but not common; Mission Bay, San Diego Co., 1936 and 1937, alive but not common; Estero, Ensenada, Mexico, 11/1936.

Genus-- Macoma Leach, 1819

Grant and Gale, " Pliocene and Pleistocene Mollusca of California", p. 365,1931; Limicola, Leach, Moll. Gt. Brit., p. 296, 1816; not Limicola, Koch, 1816, nor Fischer, 1887. Macoma Leach, in Ross's Voy. of Discovery in H.M.S. Isabella and Alexander, Appen.2, p. lxii, 1819; Journ. de Physique, Vol. 88, p. 465, 1819; Dall, Proc. U.S. Nat. Mus., Vol.23, p. 292, 1900; Trans. Wagner Inst. Sci. Vol. 3, pp. 1044,1045,1900; Woodring, Carneigie Inst., Publ. No. 366, p. 176,1925; " Macroma Leach", Gray, Ann. Phil., Vol. 25, p. 136, 1825; Proc. Zool. Soc. Lon. Pt. 15, p. 186, 1848, err pro Macoma. " Psammotea Turton", Gray, Proc. Zool. Soc. London, Pt. 15, p. 186, 1847, not of Turton, 1822, nor Lamarck, fide Dall, 1900. Type- (by monotypy), Macoma tenera Leach-- Tellina calcarea Gmelin, North American and boreal seas, to Japan and Port Etches, Alaska in the Pacific, and to Long Island Sound in the Atlantic.

The Pacific coast Macomas may be separated into four groups, 1. a miscellan--eous group; 2. a group resembling M. nasuta in shape ; 3. the M. quadrana and carlottensis group and ; 4. the M. indentata group. The last is usually placed in the Section Rexithaerus.

In the second group, M. nasuta is easily distinguished since the pallial sinus in the left valve reaches the anterior adductor scar. M. inquinata is more equilateral than M. nasuta but not as much as M. incongrua which is also more inflated.

Tryon describes this genus as having an oval shell, sub-rotund, convex,; cardinal teeth narrow; no lateral teeth; pallial impression without a profound sinus.

Macoma nasuta (Conrad), 1837 (figured)

Grant and Gale," Pliocene and Pleistocene Mollusca of Calif.", p. 365, pl.20, figs. 11a,11b, 1931. Tellina nasuta Conrad, Jour. Acad. Nat. Sci. Phila., Ser.1, p. 258, 1837; Hanley, in Sowerby's Thes. Conch., Vol.1, Tellina, p. 314, pl.64, fig. 224, 1846; not Tellina nasuta Conrad, U.S. Exploring Expd., Vol. 12, p. 725, 1849(-- T. subnasuta Conrad, 1865). Macoma nasuta Conrad, Gabb, Geol. Surv. Calif. Palaeo., Vol. 2, p. 93, 1868-9; Cooper, 7th Ann. Rept. Calif. State Mineral--ogist, p. 248, 1888; Keep, West Coast Shells, p. 194, fig. 165, 1888, 1892; Williamson, Proc. U.S. Nat. Mus.,Vol. 15, p. 185, 1892; Dall, U.S. Geol. Surv. 17th Abb. Rept. Pt. 1, p. 845, 1896; Proc. U.S. Nat. Mus., Vol. 23, pp. 307,308, 1900; Trans. Wagner Inst. Sci. Vol.3, p. 1053; Arnold, Mem. Calif. Acad. Sci. Vol. 3, p. 163, pl. 16, fig.3, 1903; Dall, U.S. Geol. Surv., Prof. paper 59, p 127, 1909; Arnold, U.S. Geol. Surv., Bull. 396, p. 156, pl. 25, fig. 5, Jan. 15,1910; Arnold and Anderson, Bull 398,p 318, pl; 42fig.6, p 328, pl. 47, fig.5, 1910; Arnold and Hannibal, Proc. Amer. Philos. Soc., Vol. 52, pp. 593,594,595,1913; Clark, Univ. Calif. Publ. Geol., Vol. 8, p. 418, 1915; Weaver, Univ. Wash, Publ. Geol. Vol.1, no.1, pp. 28,32, 1916; Martin, Univ. Calif. Publ. Geol. Vol.9, p. 252, 1916; Nomland, Vol.10, pp. 219,300, 1917; Packard, Univ. Calif. Publ. Zool., Vol. 14, p. 279, pl. 23, figs. 1a-1d, 1918; Weymouth, Calif. Fish & Game Comm, Fish Bull No.4, p.43, pl.11, fig.3, pl.12, figs.1,2,1920; Dall, U.S. Nat. Mus. Bull. 112, p. 47, 1921; Dickerson, Proc. Calif. Acad. Sci. Ser.4, Vol.11, pp. 550,563,1922; I.S. Oldroyd, Univ. Wash. Publ.Puget Sound Biol. Sta., Vol.4, p. 53 pl.32, figs.1a,1d, 1924; Stanford Univ. Publ. Geol., Vol.1, p. 174,pl.45, figs. 1a,1d (reproduction of Packards figures), 1924; E.K. Jordan, Proc. Calif. Acad. Sci., Ser.4, Vol.15, p. 244, 1926; Waterfall, Univ. Calf. Publ. Geol.,Vol.18, p.78, 1929.

Type specimen: At the Academy of Natural Sciences, Philadelphia.
Type locality: Near San Diego, Calif.
Pleistocene: All of the California formations.
Recent: Kodiak Island and Cook's inlet, Alaska, south to Scammon's Lagoon, Mex. (Dall); Terminal Island, 1935; Anaheim Bay, 5/30/35; Mugu Bay, Ventura Co.,also in inlet; Oceano, Calif. 6/1935, washed up; Morro Bay, 6/1935; Santa Monica, Calif. 5/1936 in from 5 to 10 ftms.; Monterey, Calif. 8/1937, 10 to 25 ftms., 8/1940 at 25 ftms.

Redondo Beach, Calif. 1937-1941 in 25 ftms.
Comment: M. nasuta can be readily distinguished from other California Macomas since the pallial sinus in the left valve reaches the anterior adductor scar.

Weymouth states" It is a hardy species, flourishing under conditions speedily fatal to many other forms. This is particularly true of brackish water which is encountered in small lagoons with little, or only intermittant communication with the oceans, and its wide distribution undoubtedly depends on this hardiness. The most favored locality is in fine mud little exposed to wave or current and it is regularly found in mud too soft for any other species."(Fish Bull. #4, Calif. Fish and Game).

In April, 1943, we collected M. nasuta in Newport Bay and observed that they lived about six inches beneath the surface of the mud with the long axis parallel to the surface of the mud and the umbones uppermost. The animals were arranged around Callianassa burrows and hence we assumed that these specimens extended their siphons into the burrows instead of to the surface of the mud.

Macoma inquinata (Deshayes)1854 (figured)

Grant and Gale " Pliocene and Pleistocene Mollusca of Calif." p. 367, pl.20, fig. 5, 1931. Tellina inquinata Deshayes, Proc. Zool. Soc. Lon., for 1854, p.357; Hanley in Sowerby's Thes. Conch., Vol.1, Tellina, pl.30, fig. 164, 1846; Reeve, Conch. Icon., Vol.17, Tellina, pl.30, species 164, 1867; Romer Syst. Conchyl., Cab., Vol. 10, p. 227, pl.44, figs. 1-4, 1871. Macoma inquinata Deshayes, Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 689, 1864; Gabb, Geol. Surv. Calif. Palaeo., Vol.2, p.93, 1868-9; Cooper, 7th Ann. Rept. Calif. State Mineralogist, p.248, 1888; Dall, Pro.U.S. Nat. Mus., Vol. 23, p. 307, 1900; Trans. Wagner Inst. Sci., Vol.3, p. 1053, 1900; Arnold, Mem. Calif. Acad. Sci. Vol.3, p 162, pl.16, fig.4, 1903; U.S. Geol. Surv. Bull. 396, p. 164, pl.29, fig.3, 1910; Bull 398, pl.51, fig.3, 1910; Arnold and Hannibal, Proc. Amer. Philos. Soc. Vol. 52, pp 590, 596, 1913; Martin, Univ. Calif. Publ. Geol. Vol. 9, p. 252, 1916; Nomland, Vol.10, p. 219, 1917; Packard, Univ. Calif. Publ. Zool., Vol. 14, p. 278, pl.23, figs. 1a-b, 1918; Dall, U.S. Nat. Mus. Bull 112, p. 47, 1921; Howe, Univ. Calif. Publ. Geol. Vol. 14, p. 92, 1922; Dall, Amer. Journ. Sci. Ser.5, Vol.4, p 311, 1922; I.S. Oldroyd, Univ. Wash. Publ., Puget Sound Biol. Sta., Vol.4, p 54, pl.32, figs. 2a-b, 3a-b, 1924; Stanford Univ. Publ. Geol., Vol.1, p. 172, pl.45, figs. 2a-b, 3a-b, 1924; E.K. Jordan, Bull. So. Calif. Acad. Sci. Vol.23, p. 151, 1924; T.S. Oldroyd, U.S. Nat. Mus, Vol.65, Art.22, p7, 1925;
Type locality: Vancouver Island, British Columbia; Recent.
Pleistocene: Coos Bay, Oregon; San Pedro, Calif. deposits; San Ignacio Lagoon, Lower Calif., Mexico.
Recent: Bering Strait to Japan on the west and to Monterey Bay, on the east (Dall, 1921). Terminal Island, Los Angeles County, Cailif. winter of 1934, washed up alive after storm; Morro Bay, Calif., 1936, and 5/1940, not common; San Francisco Bay, (San Mateo), 1/1938, common; Port Orchard, Washington, 8/1936; Alki Point, Seattle, Wash. 8/1936, common.
Comment: Distinguished from M. nasuta since pallial sinus does not reach the anterior adductor scar in either valve and from M. incongrua by being less inflated. Found usually in soft muddy sand.

Macoma incongrua (Martens), 1865 (figured)

Grant and Gale, " Pliocene and Pleistocene Mollusca of Calif." p 373, 1931. Tellina incongrua von Martens, Ann. Mag. Nat. Hist., Ser.3, Vol.16, pp.430,431, 1865. Tellina rotundata Sowerby, in Reeve's Conch. Icon., Vol.17, Tellina, pl. 27, fig. 146, June 1867;. Macoma incongrua von Martens , Dall, Proc. U.S. Nat. Mus Vol.23, p.306, 1900; U.S. Nat. Mus. Bull. 112, p.46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol.1, p. 170, pl.42, fig.10, 1924. Macoma rotundata Sowerby, Dall, in Moffit, U.S. Geol. Surv., Bull. 533, p.46, 1913.
Type locality: Yokohama, Japan; Recent.

Recent: Arctic Ocean, south to Japan on the west and to San Diego, Calif. on the east (Dall, 1921). Kodiak Island, Alaska to Tacoma, Wash.(G. Willett); not known to members from our local waters.
Comment: Distinguished from M. inquinata in being more inflated and more equilateral. This shell seems to be identical with M. inquinata arnheimi Dall. Found in soft muddy sand.

Macoma brota Dall, 1916

Grant and Gale, " Pleiocene and Pleistocene Mollusca of Calif." p. 368, 1931. Tellina edentula Broderip and Sowerby, Zool. Journ., Vol.4, p. 363, Jan. 1829; Sowerby, Beechey's Voy., H.M.S. Blossom, p. 154, pl. 41, fig.5, pl.44, fig.7, 1839; Hanley, Descr. Cat. Rec. Biv. Shells, p.71, 1842; Hanley in Sowerby's Thes. Conch, Vol.1, p. 315, pl.65, fig.243, 1847; ? Grewingk, Russisch-Kaiserliche Mineralogische Gessel. zu St. Petersburg, Verhandlungen for the yrs. 1848-49, p. 357, pl.7, figs.1a-c, 1850; not Tellina edentula Spengler, 1793. Macoma edentula Broderip and Sowerby, Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 307, 1900. Macoma brota Dall, Pro. U.S. Nat. Mus. Vol.52, p. 413, Dec.27, 1916; Canadian Arctic Expd., Vol.8, Pt.A, p 29A, 1919; U.S. Nat. Mus. Bull. 112, p.46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol.1, p 170, pl.9mfig2, 1924.
Type specimen: Of M. brota Dall, in the U.S. National Museum
Type locality: Bering Strait
Pleistocene: Northwest Canada, not found here.
Recent: Bering Sea to Puget Sound (Dall, 1921). Wrangel, Alaska, in 60 ftms. (G. Willett)
Comment: Surface dull; umbones further posterior than M. calcarea.

Macoma brota lipara Dall, 1916

Grant and Gale " Plåocene and Pleistocene Mollusca of Calif.", p 368, 1931. Macoma brota, new var. lipara Dall, Pro. U.S. Nat. Mus., Vol. 52, p. 414, Dec. 27, 1916. Macoma brota lipara Dall, U.S.Nat. Mus. Bull. 112, p. 46, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol. Vol.1, p. 171, pl.42, fig.6, 1924.
Type specimen: U.S. National Museum, Cat. No. 223,032
Recent: Bering Sea to Puget Sound (Dall, 1921)
Ketechikan and Unilaska, dredged (G. Willett)
Comment: Similar to M. inquinata., live in sandy mud.

Macoma calcarea (Gmelin) , 1792

Grant and Gale " Plåocene and Pleistocene Mollusca of Calif.", p. 369, 1931. Tellina calcarea Gmelin, Systema Naturae, Ed. 13, Vol.1, pt. 6, p. 3236, 1791; Hanley, Descr. Cat. Rec. Biv. Shells, p.46, pl.4, fig.43, 1842; Moller, Index Moll Groen., p.20, 1842; ? Hanley, Sowerby's Thes. Conch. Vol.1, Tellina, p.314, pl.62, fig 183, 1847; Tellina lata Gmelin, Systema Naturae, Ed. 13, Vol.1, pt. 6, p.3237, 1791. Tellina sabulosa Spengler, Skrift. Naturh. Selsk., Vol.4, p. 114, 1794. Macoma tenera Leach, in Ross's Voy. of Discovery in H.M.S. Isabella and Alex., App. 2 p. lxii, 1819; Journ. de Phys., Vol.88, p 465, 1819. Tellina proxima (Brown MS) Sowerby, Zool. Beechey's Voy. Blossom, p. 154, pl.44, fig.4, 1839; Hanley, in Sowerby's Thes. Conch., Vol. 1, Tellina, p. 313, pl.66, fig.264, pl.59, fig.115, 1847; Forbes & Hanley, Hist. Brit. Moll. Vol.1, p. 307, pl.21, fig.1, 1850; Vol.4 p 251, pl.133, fig.3, 1853. Tellina sodidda Couthouy, Boston Journ. Nat. Hist., Vol. 2, p.59, pl.3, fig.11, 1838. Sanguinolaria sordida Couthouy, Gould, Invert. Mass., p 67, 1841. Macoma proxima Sowerby, Gould, Invert. Mass., Binney Ed., p.95, fig.401, 1870. Macoma calcarea Gmelin, Sars. Moll. Reg. Arct. Norv., p.76, pl.6, figs.2a-b, 1878; Gabb, Geol. Surv. Calif. Palaeo., Vol.2, p. 124, 1868-9 (as of "Chem" sp.); Cooper, 7th Ann. Rept. Calif. State Mineral., p 248, 1888 (as of Chem.); Dall, Proc. U.S Natl. Mus., Vol. 23, pp.299, 307, 1900; Trans. Wagner Inst. Sci. Vol.3, p.1046, 1900; Arnold, Mem. Calif. Acad. Sci. Vol.3, p 161, pl.16, fig.2, 1903; Dall, Wash. Acad. Sci., Harriman Alas. Ex., Vol.4, p.121, 1904; Dall, U.S. Geol. Surv. Prof. pap. 59, pp126, 127, 1909; Weaver, Wash. Geol. Surv., Bull.15, p.18, 1912; Arnold & Hannibal, Proc. Amer. Philos. Soc., Vol.52, pp 580, 592, 1913; Weaver, Wash. Publ. Geol., Vol.1, no.1, pp 28, 32, 1916; Martin, Univ. Calif. Publ. Geol., Vol.9, p 252

1916; Dall, Canadian Arctic Exped., Vol.8,Pt.A, p 29A,1919; Baker, Amer. Mus.Nat. Hist.,Vol.41, Art.11,p 499,1919; Dall, U.S.Nat. Mus. Bull. 112, p.47,1921; Howe, Univ. Calif. Publ. Geol.,Vol.14, p.92,1922; I.S. Oldroyd, Stanford Univ. Publ. Geol.,Vol.1, p.173,pl.42, fig.5, 1924;Waterfall,Univ. Calif.Publ. Geol.,Vol.18,p 78,1929; Stephens, Trans. San Diego Soc. Nat. Hist.,Vol.5, pp 251,253,1929. Macoma sabulosa Spengler,Dall, Exped. to Point Barrow, p.183,1885; Dall, in Spurr U.S. Geol. Surv.,20th Ann.Rept. Pt.7,p264,1900;Dall in Moffit, U.S. Geol. Surv., Bull.533,p.45,1913;Dall, Canadian Arctic Expd., Vol.8, Pt. A, p 29A, 1919. " Tellina albaria (Conrad)", Reagan, Trans. Kansas Acad. Sci.Vol.22,p.184,pl.2, fig.15,1909, not of Conrad.

Pleistocene: Lower San Pedro series (Arnold). Saugus formation near Ventura; Mission Bay, San Diego; Canada; Alaska.

Recent: Arctic Ocean to northern Japan and to Monterey Bay, Calif., circumboreal (Dall, 1921). Wrangel, Alaska, in 60 ftms. (G. Willett).

Comment: Similar to M. brota but with a chalky shell and with the posterior flexure more pronounced. The species prefers deep water, or, at least, is not littoral or estuarine (Dall, 1900).

Macoma balthica (Linnaeus), 1758

Grant and Gale, " Pliocene and Pleistocene Mollusca of Calif." p. 371, Pl. 14, figs. 6a,6b, pl. 20, figs. 7a-b, 1931.

Tellina balthica Linnaeus, Syst. Nat. Ed. 10, p.674, 1758; Ed.12,p.1116,1767; Born, Test. Musei Caesaeri Vindobonensis,p 38,pl2,fig.14,1780;Chemnitz,Neues Syst. Conch. Cab.Vol.6, p 133,pl.13,fig.128,1782;Hanley, in Sowerby's Thes. Conch Vol.1 Tellina,p 316, pl 59, fig 121,1847. Venus fragilis O. Fabricius, Fauna Groenl., p. 413,1780, not of Linnaeus, fide Hanley, 1847, and Dall 1900. Psammobia fusca Say, Journ. Acad. Nat. Sci. Phila., Vol.5, p 219, 1827. Tellina inconspicua Broderip & Sowerby, Zool. Journ. Vol.4, p 363, 1829; Sowerby, Zool., Beechey's Voy. p. 153, pl.41,fig.6,1839;Mighels, Boston Journ. Nat Hist., Vol.4 p 317, 1843; Hanley in Sowerby's Thes Conch., Vol.1, Tellina,p 317, pl 59,fig 120 1847; Sanguinolaria fusca Say, Conrad, Amer. Marine Conch. p. 34, pl.7,fig 1,1831; Gould, Invert. Mass., p 66, fig.42, 1841.Tellina gronlandica (Beck MS) Lyell, Trans. Geol. Soc. Lon., Ser.2, Vol. 6, p 137, pl. 16, fig.8,8a,1839. Tellina fusca Say, Philippi, Abbild. und Beschr., Vol.2, Tellina, p. 24, pl.3, fig 3,1845; Hanley, in Sowerby's Thes. Conch. Vol. 1, Tellina, p 316, pl. 59, fig. 117,1847. Tellina fabricii Hanley, in Sowerby's Thes. Conch., Vol. 1, Tellina, p 318, pl. 49, fig. 112, 1847. Macoma fsuca Say, Gould, Inv. Mass., Binney Ed., p. 93, fig. 42, 1870. Macoma inconspicua Broderip & Sowerby, Dall, U.S. Geol. Surv.,17th Ann. Rept., Pt. 1, p. 845, 1896; Canadian Arctic Expd., Vol. 8, Pt. A, p 29A, 1919. Macoma balthica Linnaeus, Dall, Trans. Wagner Inst. Sci. Vol.3, pp. 1051-53,1900; Proc. U.S. Nat. Mus. Vol. 23, p. 298, 1900; Canadian Arctic Expd., Vol. 8, Pt.A p 29A 1919; U.S. Nat. Mus. Bull 112, p 47, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 172, pl. 44, figs. 1,2,9,1924. Macoma balthica , var. inconspicua Broderip & Sowerby, Dall, Wash. Acad. Sci., Alaska, Harriman Alaska Exped., Vol. 4, p. 121, 1904, reissued by Smithsonian Inst. , 1910. Macoma balthica inconspicua Broderip & Sowerby, Keep, Baily " West Coast Shells", Stanford Univ. Press, 1935.

Type locality: Baltic Sea

Pleistocene: Canada and northern California

Recent: Circumboreal; Arctic Ocean to San Diego (Dall). Alki Point, Puget Sound, Aug. 1936; Raymond, Wash. in lagoons along Washington coast ; Oregon coast in bays.

Comment: This is called variety inconspicua Broderip and Sowerby by Keep and Bailey " West Coast Shells". Lives in mud or sandy mud just under the surface.

Macoma quadrana Dall, 1916 (figured)

Dall, Proc. U.S. Nat. Mus. Vol. 52, No. 2183, p. 414, 1916.

Type locality: Point Conception, Calif. in 284 fathoms.

Pleistocene: " Timm's Point" , San Pedro, Calif.

Recent: Alaska to Coronado Islands, Lower California, Mexico.

Off Redondo Beach, 75 ftms. Aug. 1938, in mud bottom.

Comment: After examining topotypes of Macoma planiuscula Grant and Gale, 1931, Mr. George Willett believes that what we have been calling M. planiuscula is really M. quadrana Dall, 1916.

The specimen figured is from Timm's Point and is a small specimen.

Macoma planiuscula Grant and Gale, 1931 (figured)

Grant and Gale, " Pliocene and Pleistocene Mollusca of Calif." p 372, pl. 14, figs. 11a-b, pl. 20, figs. 8a-b. " Macoma carlottensis Whiteaves", Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 308, 1900; Bull. 112, U.S. Nat. Mus., p 47, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 175, 1924; and of other recent Pacific coast authors, not of Whiteaves, 1880.? Tellina carlottensis Whiteaves, Dall, U.S. Geol. Surv., 17th Ann. Rept., Pt. 1, p. 845, 1896.

Type locality: Nunivak Island, Alaska; Recent.

Type specimen: In the Oldroyd collection at Stanford Univ., labeled 301-1A.

Recent: Arctic Ocean to Puget Sound; Nunivak Island, Alaska (Willett).

Comment: See under M. quadrana. This probably does not occur off California. According to Grant and Gale, Dall confused M. carlottensis with an undescribed species which they named M. planiuscula. Therefore, all references by Dall to M. carlottensis are in reality to M. planiuscula.

Macoma carlottensis (Whiteaves), 1880 (figured)

Tellina carlottensis Whiteaves, Rep. Progress, Geol. Surv. Canada 1879-1880, p. 196 B, fig. 1, 1880.

Macoma inflatula Dall, Bull. Nat. Hist. Soc. Brit. Col., No.2, p.11, pl.1, figs. 4,9, 1897.

Pleistocene: Timm's Point, San Pedro, California.

Recent: Arctic Ocean and south to Ballenas Lagoon, Lower Calif. (Dall, for M. inflatula) . Redondo Beach, Calif. 1938-1941, 50-75 ftms. in mud bottom.

Comment: Since Dall confused M. carlottensis with what is now M. planiuscula he redescribed M. carlottensis as M. inflatula. Therefore, M. inflatula is synonomous with M. carlottensis. This is an inflated subtriangular form which is distinct from all other west coast Macomas.

Macoma expansa Carpenter, 1864

Suppl. Rep. Brit. Assoc. p. 639, 1864; Proc. Acad. Nat. Sci. Phila., p.55, 1865.

Dall, Bull. 112, U.S.Nat. Mus, p. 48, 1921.

Dall, Proc. U.S. Nat. Mus. Vol. 23, p. 308, 1900.

Recent: Puget Sound to La Jolla, Calif. (Dall, 1900).

Comment: " This must be regarded as a doubtful species. The two specimens upon which it was founded belong to different species and neither agrees with Carpenter's diagnosis. Specimens from Bolinas Bay, Calif., collected by Stearns, which have been associated with the specimens named by Carpenter, may belong to a valid species which will carry the name." (Dall, 1900).

Unknown to any member of the club.

Macoma leptonoidea Dall, 1895

Nautilus, IX, July, 1895, p. 33; Dall, Proc. U.S. Nat. Mus. Vol. 23, pp. 308,323, pl.4, figs.4,9, 1895; Bull. 112, U.S. Nat. Mus. p. 47, 1921.

Type locality: Matagorda Bay, Texas.

Recent: Texas coast; Santa Barbara channel in 332 fathoms in green mud.

Comment: The figured specimen is from the Santa Barbara Channel. " The occurrence of this species in two such different localities is difficult to explain; the facts, however, seem beyond question, and the specimens show no differences whatever. Several years intervened between the receipt of the Texas specimen and that of the bottle of dredgings from California, so there seems no opportunity for a confusion of labels". (Dall, 1900).

Macoma yoldiformis Carpenter, 1864 (figured)

Grant and Gale " Pliocene and Pleistocene Mollusca of Calif." p. 373, 1931; Brit. Assn. Adv. Sci. Rept. for 1863, p. 639, 1864; Proc. Acad. Nat. Sci. Phila. for 1865, p.56, 1865; Cooper, 7th Ann. Rept. Calif. State Mineralogist, p. 249, 1888; Dall, Proc. U.S. Nat. Mus., Vol. 23, p. 309, 1900; Arnold, Mem. Calif. Acad. Sci., Vol.3, p. 165, pl. 16, fig.6, 1903; Martin, Univ. Calif. Publ. Geol. Vol.9 p. 252, 1916; Dall, U.S. Nat. Mus., Bull. 112, p. 48, 1921; Jordan, Bull. So. Calif Acad. Sci. Vol. 23, p. 151, 1924; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol. 1, p. 177, pl. 44, fig.6, 1924; Jordan, Proc. Calif. Acad. Sci. Ser.4, Vol. 15, p. 244, 1926; Waterfall, Univ. Calif. Publ. Geol., Vol. 18, p. 78, 1929.

Pleistocene: Lower San Pedro; Saugus formation near Ventura; San Diego; San Quintin Bay, Lower Calif.

Recent: Fuca Straight to San Diego, Calif. (Dall)

Formerly plentiful on the ocean side of Terminal Island (Tremper); Santa Mon--ica, Calif. 5 ftms. 12/1935; Anaheim Bay, (dead), 3/1936; Morro Bay, 2/1937 by shore screening; Monterey, 8/1937 in 10 ftms. & 25 ftms., 8/1940 in 25 ftms. shale and mud; Redondo Beach, Calif. 1937-41, 15-25 ftms. gravel and sand.

Comment: Macoma yoldiformis Carpenter cannot be confused with any other species. They are found occasionally in our bays, but live in shallow water along the coast.

Macoma alaskana Dall, 1900 (figured)

Dall, Proc. U.S. Nat. Mus. Vol. 23, No. 1210, p.323, 1900; Bull. 112, U.S. Nat Mus., p. 48, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol., Vol.1, p. 177, pl. 13, fig.14, 1924.

Type : In U.S. National Museum, No. 108652

Type locality: Lituya Bay, Alaska.

Recent: Lituya Bay to Gulf of Georgia (Dall, 1921). Forrester Island, Alaska, in 50 ftms. (Willett); Ketchekan, Alaska (Willett); Craig, Alaska, 20-30 ftms. (Willett).

Comment: This species looks externally like an Angulus (subgenus of Tellina) but has the hinge of a Macoma. Lives on sandy bottom, coarse, perhaps with rocks.

Section Rexithaerus Conrad, 1869

Macoma secta (Conrad), 1869 (figured)

Grant and Gale " Pliocene and Pleistocene Mollusca of Calif.", p. 374, pl. 20, figs. 6a-b, 1931. Tellina secta Conrad, Journ. Acad. Nat. Sci. Phila., Vol.7, p. 257, 1837; Hanley, in Sowerby's Thes. Conch., Tellina, p. 327, pl.65, figs. 245,248,1847. Macoma secta Conrad, H.& A. Adams, Gen. Rec. Moll., Vol. 2, p.401, 1858; Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 639,1864; Cooper, 7 th Ann. Rept. Calif. State Mineralogist, p. 249, 1888; Keep, West Coast Shells, p. 191, fig. 163, 1888, 1892; Arnold, Mem. Calif. Acad. Sci. Vol.3, p. 164, pl.16, fig.5, 1903; Arnold, U.S. Geol. Surv., Bull. 396, p. 30, pl.20, fig.1, Jan.15, 1910; Arnold and Anderson, Bull. 398, pp. 110,131,318, pl.42, fig.1, 1910; Thompson, Rept. B.C. Comm. of Fisheries for 1912, pp.1-41,1-48, pl.8, 1913; English, Univ. of Calif. Publ. Geol. Vol.8, p.210, 1914; Clark, Vol.8, pp.404,418, 1915; Martin, Vol.9 p.252, 1916; Weaver, Univ. Wash. Publ. Geol., Vol.1, pp28,33, 1916; Nomland, Univ. Calif. Publ. Geol., Vol.10, pp.211,219,330, 1917; Packard, Univ. Calif. Publ. Zool. Vol.14, p.280, pl.25, fig.8, 1918; Weymouth, Calif. Fish and Game Comm., Fish Bull. No.4, p.44, pl.12, figs.3,4, pl.13, fig.1, 1920; Dall, U.S. Nat. Mus. Bull. 112, p.48, 1921; I.S. Oldroyd, Stanford Univ. Publ. Geol. Vol.1, p.178, pl.44, fig.8, 1924; Jordan, Bull. So. Calif. Acad. Sci., Vol.23, p.149, 1924; Proc. Calif. Acad. Sci. Ser.4, Vol.15, p.244, 1926. " Macoma var. edulis, Nutt." Carpenter, Brit. Assn. Adv. Sci. Rept. for 1863, p. 639, 1864. Macoma (Rexithaerus) secta Conrad, Dall, Trans. Wagner Inst. Sci., Vol.3, p. 1053, 1900. Keep and Baily, " West Coast Shells p. 104, 1935.

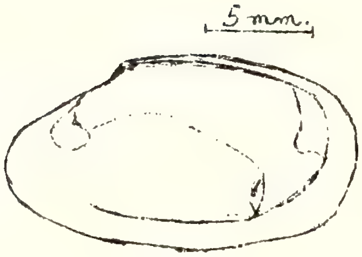
Type specimen: In the Academy of Natural Sciences of Philadelphia
Type locality: San Diego, Calif.; Recent.
Pleistocene: All of the local deposits.
Recent: Vancouver Island, British Columbia, south to the Gulf of California, Mex., also Japan. (Grant and Gale); Terminal Island, Calif., formerly plentiful on beach after storm(W.H. Eshnaur); Seal Beach to Huntington Beach-- washed up from off shore reef, common, fresh dead and occasionally live specimens; Anaheim Landing, Calif.; Mugu Bay, Ventura Co., Calif. 6/1935; Morro Bay, 6/1935, very small washed up and also living in the bay; Playa del Rey, Calif.; Redondo Beach, Calif. 7/1938, small specimens in 25 ftms.; Seattle, Wash. (oddly corroded specimens from W.J. Eyerdam); San Juan Island, Wash. 1941.
Comment: We have never found specimens as large as those which wash up on the beach between Seal Beach and Huntington Beach. These large specimens probably live near the outer edge of the surf on the surface of the sand. Specimens from Seattle sent to us by Eyerdam have the left convex valve badly corroded. This valve looks more like part of the shell substance had been dissolved than eroded by sand. If this is true it would indicate that left side is up and the flat right side is kept down.

Macoma indentata Carpenter, 1864 (figured)

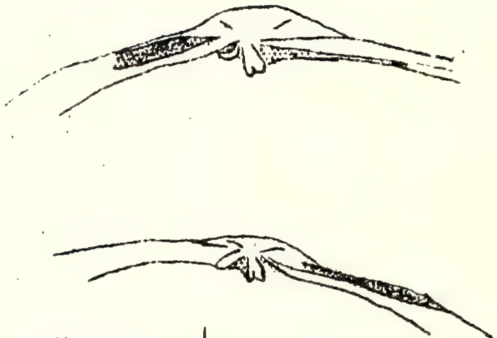
Grant and Gale," Pliocene and Pleistocene Mollusca of Calif.", p. 374, 1931. Brit. Assn. Adv. Sci., Rept. for 1863, p. 639, 1864; Cooper, 7th Ann. Rept. Calif. State Mineralogist, p. 248, 1888; Keep, West Coast Shells, p. 195, 1888,1892; Williamson, Proc. U.S. Nat. Mus., Vol.15,p.185, 1892; Arnold, Mem. Calif. Acad. Sci. Vol. 3,pp.161,162,1903;Proc. U.S. Nat. Mus.,Vol.32,p.526,1907; English,Univ Calif. Publ. Geol.,Vol.8, p.210, 1914; Martin,Vol.9,p.252,1916;Nomland,Vol.10, p.300 (?),1917; Dall,U.S. Nat. Mus. Bull. 112, p.48,1921;Howe, Univ. Calif. Publ. Geol., Vol.14,p.92,1922; I.S. Oldroyd, Stanford Univ. Publ. Geol.,Vol.1, p.178,pl.44,fig.4, 1924; T.S. Oldroyd, Proc. U.S. Natl. Mus., Vol.65, Art.22 p.7,1925;E.K. Jordan, Proc. Calif. Acad. Sci. Ser.4, Vol.15,p.244,1926.
Macoma (Rexithaerus) indentata Carpenter, Dall. Proc. U.S. Nat. Mus., Vol.23, p.309,1900.
Type locality: San Pedro, Calif.
Pleistocene: San Pedro deposits; Playa del Rey, Baldwin Hills; and other local.
Recent: Puget Sound to Lower Calif., Mexico. (Dall, 1921).
Formerly to be found on the mud flats near the Southwest Ship Yards at San Pedro (Mrs. W.H. Eshnaur); Anaheim Bay in sandy mud at a depth of from 3 to 6 inches; (A.M. Strong) ; Redondo Beach, 6/1938 25 ftms. in gravel; Playa del Rey (slough) 12/1936; Morro Bay, Calif. 1/1937, very abundant; Surf, Calif. common on beach; Monterey, Calif. 8/1940, 20 ftms. on shale bottom; Estero de Punta Banda, Mexico, 11/1936.
Comment: Like a young M. secta but beaked, indented, and ventrally produced (Carpenter). As very large M. secta have a slight indentation, one might confuse this species with M. indentata . If specimens the same size are compared, however, the difference is apparent. A small M. secta is very much rounder and does not have any trace of the indentation that the very large specimens show. This species usually lives buried in sandy mud or sand in bays, but is found in deeper water.

Macoma indentata tenuirostris Dall, 1900

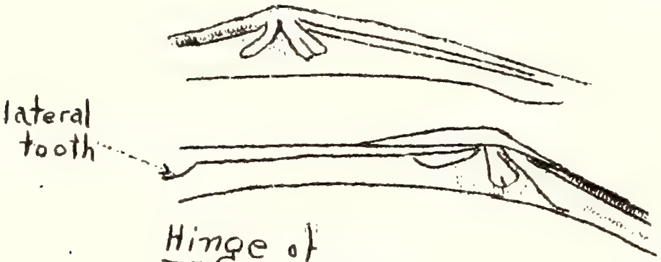
Proc. U.S. Nat. Mus., Vol.23, p.309, 1900; U.S. Natl. Mus. Bull. 112, p.48,1921; I.S. Oldroyd, Stanford Univ. Publ. in Geol., Vol.1,p.178,1900.
Type locality: San Pedro, Calif.
Pleistocene: Baldwin Hills, Playa del Rey; San Pedro, Calif.
Recent: Santa Barbara Ids. to San Diego (Dall). Terminal Island, washed up; Redondo Beach, 8/1939, 25 ftms. in gravel, 7/1938, 75 ftms. mud & gravel.
Comment: Differs from typical M. indentata in being more elongated, with a shorter and more pointed end and a deeper flexure.(Dall,1900)



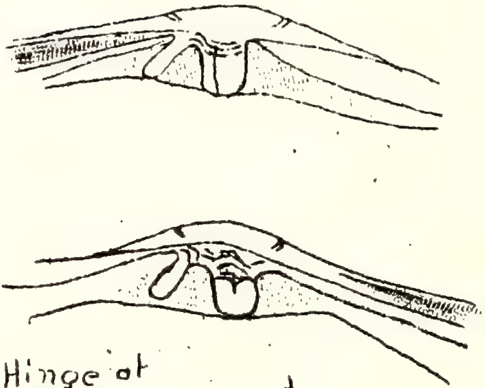
Macoma yoldiformis



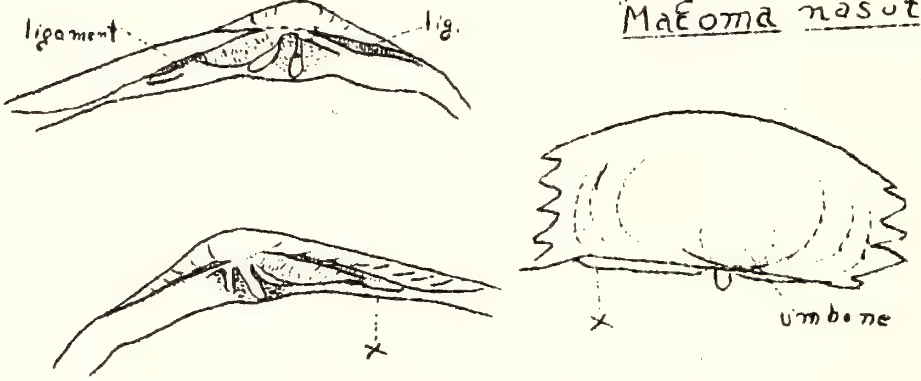
Hinge of
Macoma carlottensis


lateral tooth

Hinge of
Tellina bodegensis



Hinge of
Macoma nasuta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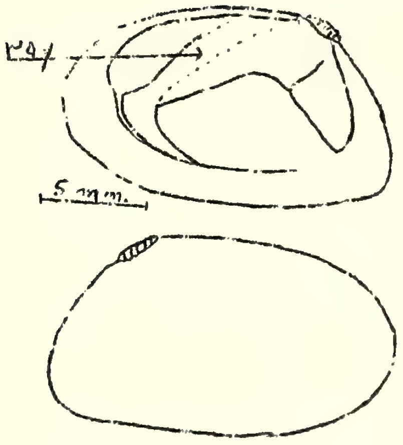
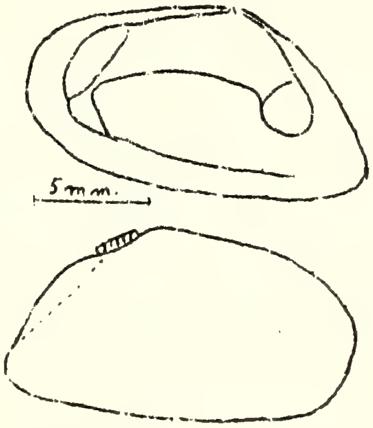
hinge of Apolymetis biangulata

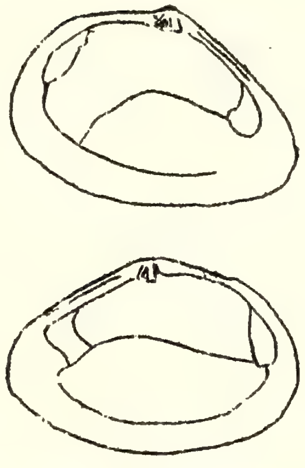
Burch and Burch - Tellinidae - 1943



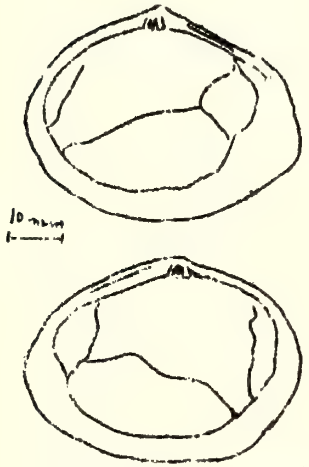
Tellina buttoni



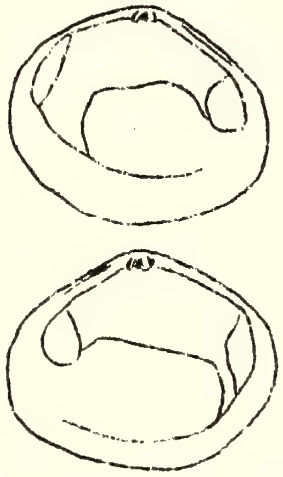
Tellina carpenteri



Macoma nasuta



Macoma inquinata



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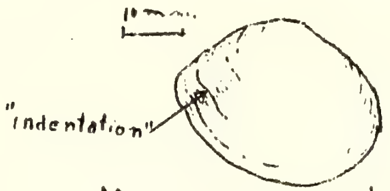
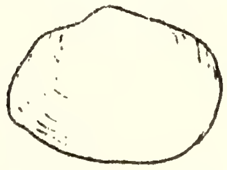

10 mm.
"indentation"

Macoma indentata



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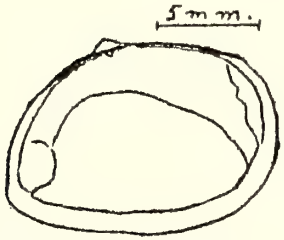

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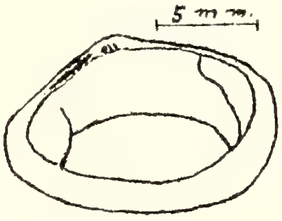
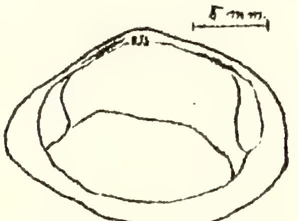
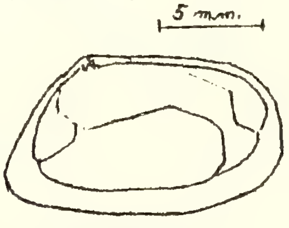


M. quadrana



M. planuiscula
[topotype]



M. ~~moesta~~ alaskana

CONE SHELLS OF THE HAWAIIAN ISLANDS

By Charles A. Allen

Introduction: The writer has lived in the Hawaiian Islands for a number of years and has collected most of the species listed below.

Conus acutangulus Reeve- The only specimen of this Conus I have ever seen was from the Honolulu Harbor dredgings, taken by W.A. Bryan, and is now in my collection.

Conus atramentosus Reeve- Mr. D. Thaanum of Honolulu has taken this shell on Hawaii.

Conus bullatus Linn. - I have seen only one specimen of this Conus from Hawaii. It was dredged by Capt. Fred Lewis off Kaiii in 1937, and is now in the Los Angeles Museum.

Conus cingulum Gmelin- Taken frequently in Kaneohe Bay, Oahu.

Conus cingulum ponderosus Beck- This Conus is also frequently taken in Kaneohe B.

Conus ceylonensis Hwass- Numerous specimens of this Conus are taken in the shallow reef waters, and frequently dredged in deep water. Has a wide distribution.

Conus ceylonensis pusillus Chem.- This Conus is taken with C. ceylonensis.

Conus ceylonensis nanus Brod.- This little fellow also associated with C. ceylonensis.

Conus cylindraceous Brod. & Sby.- This graceful Conus is occasionally dredged in off-shore waters. I have one specimen from Midway Island.

Conus catus Hwass- Found in shallow waters and tide pools, has a wide distribution.

Conus clavus dactylosus Kien.- The writer has a beautiful specimen taken on Midway. It is sometimes dredged.

Conus distans Hwass- I have several specimens from deep water off Waikiki. It is often dredged.

Conus flavidus Lamarck- This Conus is one of our most common varieties and is easily taken in shallow reef waters. It is widely distributed throughtout the Ids.

Conus hebraeus vermiculatus Hwass- This Conus is taken in shallow waters and tide pools. It is also dredged in deep water.

Conus hebraeus Born- Has a wide distribution in the islands and is easily taken.

Conus imperialis Linn.- During the summer months it is frequently taken in shallow reef waters and tide pools. In winter months it is rarely observed. The young are never seen in shallow waters.

Conus literatus Linn- Frequently taken in shallow reef waters and sometimes dredged. Has a wide distribution.

Conus literatus millepunctatus Linn.- Has a wide distribution and is frequently dredged.

Conus lividus Hwass- One of the more common cones. Found on the beaches.

Conus marmoreus Linn.- This Conus has a wide distribution in the Islands. It is, however, not very frequently taken.

Conus milaris Hwass. var. abbreviatus Nutt.- This Conus is taken in shallow reef waters and is fairly common.

Conus milaris Hwass- Taken with var. abbreviatus.

Conus miles Linn.- This Conus has a wide distribution and is frequently taken in shallow reef waters.

Conus nusatella Linn.- This Conus is often found as a beach shell, but it is not often collected alive.

Conus omaria Hwass- This Conus is quite frequently found under coral heads in shallow reef waters. I have taken the young in tide pools at night.

Conus oblitus Reeve- One of the rare cones. I have never observed it on the shallow reefs, but have some dredged specimens from Kaneohe Bay, Oahu.

Conus pertrasus Hwass- This Conus is another of the rare species. It is sometimes dredged in deep water.

Conus pulicarius Hwass- This Conus is taken in shallow reef waters, frequently close to shore. The writer has a perfect specimen from Ala Moana Park Reef, over three inches in length.
Conus rattus Brug.- One of the common cones. It is easily taken in shallow reef waters and tide pools.
Conus retifer Menke- Most of the specimens of this Conus are taken on Midway Island. A few are dredged around Kauai.
Conus striatus Linn.- This Conus is taken in shallow reef waters about the Islands. More often it is dredged.
Conus sumatrensis Hwass- This Conus is often taken in shallow water close to shore, and in tide pools. It has a wide distribution.
Conus planorbis Born- I have seen several specimens from Midway Island.
Conus tulipa Linn.- Another of the rare cones of the Islands. The writer has one specimen from the Kona Coast on Hawaii and a fossil specimen from Oahu.
Conus textile Linn.- This Conus has a wide distribution in the Islands but is rarely taken. A live specimen is a real prize.
Conus vitulinus Hwass- This Conus is fairly well distributed throughout the Islands and is frequently taken in shallow reef waters.
Conus vicarius Lamarck- I have never seen or taken a live specimen of this Conus, but have found several fragments on the beaches about Oahu. No doubt this Conus inhabits the deeper off shore waters.

There are several new species of Conus soon to be described. As soon as these descriptions are off the press this writer will list them in a supplementary paper.

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EXCHANGES

If those interested in exchanging will send us their notices, we will be very glad to insert them in these papers.

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Corporal Bob Edmonds, Co.C, S.T.R., Camp Crowder, Missouri, U.S. Army gives both the new rank and address of one of our members.
John M. Dowdle was out to pay us a parting visit. Jack left on July 12 to take up his duties with the U.S. Navy at Norfolk, Virginia.
We were interested to learn that Dr. Hubert G. Schenck of Stanford University is now in the U.S. Army.
Morris E. Caruthers writes us " I was quite intrigued about the report that I had left the land of the living. I can assure you that I am very much alive and that I even managed to get up Palomar Mountain and get a nice set of Helminthoglypta cuyamacensis lowei during June and also saw the Azaleas in bloom which in itself was worth the trip. I am wondering, however, if you could tell me how the report originated. I did have an accident to my foot while I was at the ranch, broke a couple of bones, but cant see how that could have been exagerated even if the Doctor who set it was a classmate of [illegible]',Gregg's. "
Dr. W.O. Gregg dropped us a note " I note that Mrs. B. thinks she found Zonitoides arboreus in her lath house. Could be, but I doubt it. Z. arboreus like most of our native mollusca dislikes the haunts of civilized mankind. More apt to be one of the four introduced species of the genus Oxychilus, O. cellarius, draparnaudi, alliarius, or rogersi. The specimens from Mr. Caruther's yard proved to be Oxychilus cellarius."

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

August 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations to help defray the cost of material a postage.

The next meeting will be held on August 22, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.

We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the July Meeting- 1943

The Conchological Club of Southern California met at 2:30 P.M. at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. on July 25, 1943.

Mr. E.P. Baker, the president, presided. In the absence of Mrs. Effie Clark, the secretary, the minutes of this meeting will be briefly stated by your reporter John Q. Burch.

Mr. George Willett of the Los Angeles Museum gave a very interesting talk on the genus Glycimeris. However, inasmuch as much of his material was a discussion of a manuscript now in press and shortly to be published in a scientific journal, it would not be fitting to more than mention the subject here. Mr. Willett had many very fine illustrations of many mooted questions and it is to be hoped that these will be as well presented in the final publication.

Mrs. E.P. Chace gave a very interesting talk on the family Cancellariidae. This became as usual more or less of a round table discussion and was enjoyed by all present. A few of the more salient points of Mrs. Chace's talk will be listed in another place in this paper.

John Q. Burch

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Mr. George Willett, Los Angeles Museum, will appreciate a note from any collector having information about the following species from the localities listed.

Crassinella branneri Arnold- San Diego
Diplodonta sericata Reeve- San Diego
Aligena cerritensis Arnold- La Jolla
Dosinia ponderosa Gray- San Diego
Acteocina carinata Carpenter- San Diego
Nassarius cerritensis Arnold- Long Beach
Thais biserialis Blain.- San Diego
Acanthina lugubris Sowerby- San Diego
Pyramidella mazatlanica Dall & Bartsch- San Diego
Calliostoma eximium Reeve- Catalina
Ischnochiton acrior Carpenter- San Miguel Island.

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Johnsonia No.8 & 9 have been received. " The Genera Xenophora and Tugurium in the Western Atlantic" by W.J. Clench and C.G. Aguayo and " The Genera Cypraecassis, Morum, Sconsia and Dalium in the Western Atlantic" by W.J. Clench and R.T. Abbott.

This work will soon be indispensible and every student of conchology should support it by a subscription.

Pfc. Conrad Limbaugh, 39552006, 476th B Hq. and AB Sq., A.P.O. 462, Group 1, c/o Postmaster, Minneapolis, Minn. It is suggested that Conrad's friends who are interested in the land and freshwater fauna of the north write him at the abov address.

Jack Brookshire, 948 Beverley, Bellflower, Calif. Jack is a long time member of our club. The above is his home address. We hear that he is now an aviator but do not have his army address.

Mr. and Mrs. H.R. Turver, 127 Broadway, Santa Cruz, Calif. We were glad to have a letter from the Turvers and hear that they are actively working with their shell problems. Also thanks for the generous contribution.

Kenneth Althaus, 319 East 110th St., Los Angeles, Calif.- We have a letter from Herb Bolgard, Kenneth's room mate. A cable, an air mail and a V mail letter gives us the idea that Kenneth is very likely having the opportunity of personally greeting some of the conchologists from 'down under'. He has exchanged for years witha host of collectors in Australia, New Zealand etc. If we know Kenneth he will certainly bring back some nice items.

Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. recently wrote us the following " Yesterday Professor Kincaid sent me a couple of pairs of a species of Petricola which he found alive at Willapa Harbor, Pacific Co.,, Washington. They proved to be fine examples of Petricola pholadiformis Lamarck. As near as I could determine this species has not been reported farther north than San Francisco Bay, where it was introduced with seed oysters from the Atlantic Coast over 40 years ago." " There are a number of introduced Japanese marine shells in the State of Washington. Will you ask members of the club whether any of them have ever been reported and if so I would like to know in what papers they are recorded."

Note- A short article by Paul Bonnot appeared in Nautilus, Vol. XLIX, No.1, pl " A Recent Introduction of Exotic Species of Molluscs into California Waters from Japan". And I recall having seen a later article I think in the California Fish and Game listing additional species. However, many of us have seen species from Washington that are definitely introduced such as Corbicula fluminea Muller etc. It seems that an article listing these species in the state of Washington should be prepared. JQB

W.T. O'Gara, 3910 Travis Ave., Houston, Texas. We were glad to have a letter advising that he is recovering his health and is establishing himself again as a civilian. He was in the U.S. Navy and is now employed at his own line as a Paleontologist.

Mrs. J.M. Hackney, whose home address is 1333 Cornwall Pl., Norfolk, Va. will be in Atlantic Beach, North Carolina until Sept. 8.

Mr. C.L. Blakeslee, Mendon Center Road, Pittsford, N.Y. Mr. Blakeslee's letter reminds us of most of our California organizations. " We had to suspend our meetings at Buffalo for awhile but resumed them last May and are keeping them up this summer. We lost some of the young men to the service and last week one of the girls left. If it goes much farther all that will be left will be a few of us antiquarians."

[redacted] Army and now serving in Michigan.

Mr. S.L. Davidson, 33 Mont le Grand Road, Mt. Eden, Auckland, S2, New Zealand We are sorry to hear that Mr. Davidson is still in the hospital, but he is very much interested in building up by exchange and otherwise his library. It is suggested that those interested in exchanging publications communicate with him.

Dr. B.R. Bales, 149 West Main St., Circleville, Ohio. Always glad to get one of Doc's newsy letter. Among others this interesting note" Had a letter from the McGintys recently and Mack wrote that on a collecting expedition near their home at Boynton, Fla., they took two living Sinum maculatum. This is one rare shell and the only living one I ever saw was two years ago when Paul McGinty found one in Lake Worth. It's a beauty."

SHELL COLLECTING IN COSTA RICA

by Herman W. Miller

Very little has been done about collecting on the Carribean side of Costa Rica. The coast is varied and there are sandy beaches, river mouths, rocky shores, and in some places there are coral reefs. The sea is not so quiet as the Pacific however, and it is difficult and expensive to get boats. Shore collecting offers some nice species, but most of the collections now in Costa Rica show few if any East Coast species. I have always felt that anyone with equipment for dredging and working the reefs would be repaid for his labor.

The Pacific coast is a different matter. Many people spend their vacations there, and there are a few fairly good collections in the country. The coast is as varied as the Caribbean with the exception that while there is coral in deep water, I have seen no reefs. Of course, I have seen only a small part of the coast.

As to the different families of shells the *Bullidae* make up in number of individuals for the scarsity of species and one has only to spend an evening with the hermit crabs to collect quantities of good specimens. They damage the shells sooner or later but so many are wearing this kind that it is relatively easy to find plenty of good ones. *Siphonarias* are numerous also, the outstanding species being *S. gigas* Sby. and *S. characteristica* Reeve. These are eaten by the natives.

There are several beautiful *Terebras*, *T. strigata* Gray being the most striking. A close second is *T. robusta* Hds. and *T. variegata* Gray. *T. radula* Hds. are pretty and more numerous than the other two. *T. luctuosa* Hds. is a small inconspicuous species sometimes found living on the beaches and coming in with the tide just a little farther out than the *Agaronias* and *Olivellas*.

The *Conidae* are represented by a large number of species, outstanding among them *C. dalli* Stearns, *C. princeps* L., *C. lucidus* Mawe, and *C. pyriformis* Reeve. *C. tornatus* Brod. certainly looks as if it had been turned on a lathe.

The *Turridae* are represented by many fine species but as I have not yet done any dredging I shall only mention this group.

The *Cancellarias* are interesting because most of them are quite rare. *C. obesa* seems to be the exception. I once visited Culebra Bay and found literally hundreds of perfect specimens on the beach. They had been dead only long enough for the shells to be washed clean. I had to leave most of them as I had only space enough to take out a few of each species. *C. goniostoma* Orb. and *C. chrysostoma* Sby. are outstanding among other fine species but are very rare.

Most of the *Olividae* are *Olivellas* but *Oliva spicata* Rod. and its various subspecies make a nice selection in a collection and there are two fine large species, *O. angulata* Lam. and *O. porphyria* L., the latter said to be the world's largest olive shell. *O. porphyria* is seldom found in good consition on the beach and usually has to be bought. The fishermen have found out that they can sell them and they watch for them and also dive for them. Then they sell them to people vacationing on the beaches for whatever they will pay. One day I was walking along the upper edge of the beach where a thorn bush had fallen to a little below the high tide line and had caught some shells. I saw a *Murex* and started to work my way cautiously among the thorns to see if it would be worth the effort to get it out when I saw an *O. porphyria* over half grown. I forgot the thorns and almost stood on my head in the middle of the bush and it happened to be in good enough condition to be worth keeping.

There is only one *Harpa* that I know of, *H. crenata* Sby. but that varies so much in color that a rather large series is required to represent the species. The light color phase is a pretty shell but the dark ones with bands of color inside are indescribable. It is a delicate shell and must be taken alive or soon after death or it loses the fine gloss that makes it so beautiful.

The *Volutidae* have two nice representatives, *Lyria cumingii* Brod. and *L. harpa* Barnes. The *Turbinellas* have one, *Vasum caestus* Brod. which has a thick brown epidermis and a fine white porcellaneous lining.

The Mitras in general are not so brightly colored as those of the Pacific islands but there are several nice species.

Fasciolaria princeps Sby. and F. granosa Brod. are fairly common. The Latirus group is well reprsented.

Of the Buccinidae, Fusus dupetithouarsi Kien., Galeodes patula Brod. ,Hanetia pallida Brod. & Sby., Triumphis distorta Lam. and several of the Cantharus group are quite common.

The Columbellidae are numerous both in species and individuals. Many are easily found alive between tides.

The Muricidae of this region are a large and spectacular group. The subgenus Phyllonotus is especially well represented with such species as P. bicolor Val., P. brassica Lam.,P. radix Lam., P. regius Wood, P. princeps Brod. etc. The purples are very numerous also and include P. patula L., a large species which secretes an ill smelling liquid of which both the odor and the purple color are practically permanent.

There are two fine species of Distortrix and nearly a dozen species of Cymatium including C. tigrinum Brod. which deserves special mention.

The Cypraeidae are rather numerous, there being half a dozen species with perhaps as many Trivias.

The large Strombus galeatus Sby. is eaten by some people raw, with pepper sauce. I did not try it. S. peruvianus Sby. is one of the most beautiful shells of the west coast.

The Cerithidae are numerous and some species are beautiful.

There are four common Turritellas and five common Littorinas. Of these last, three can be taken alive from the mangroves at Puntarenas, and the other two on any rocky coast or wharf pilings. While climbing Mangrove trees in search of Littorinas I discovered that dead mangrove branches are very brittle.

The Calyptraeidae are numerous and confusing, at least to one who does not have access to a good library.

They say some of the larger Neritas make good eating.

Chitons are very common but I have never investigated the group. Acmaeas and Fissurellas are numerous but not so common in species.

Bivalves

Many species varied in size from microscopic to about 2 ft. in length and from dull to brightest colors. Some are thick and heavy and some so delicate that it is hard to see how the animal itself can close the shell without breaking it. A good example of this last is Mactra elegans Sby. Donax or wedge shells are common and esteemed for table use as are also several species of Tellinas. Tellidora burnetti Brod. & Sby. is very beautiful as well as thin and delicate.

The Veneridae are also very common, some species nearly covering the beaches after some tides (dead shells). Macrocallista squalida Sby. and especially var. biradiata Gray are nice looking shells as are also M. aurantiaca Han. The Pitar group is well represented, outstandingly by P. lupinaria Lesson and P. multispinosus Sby. No collection would be complete without the Dosinias, D. dunkeri Phil., D. ponderosa Gray, and D. aurica Carpenter.

The Cardiidae are varied but to me less attractive than some others, as are also the Carditidae. Chamas are common on rocky shores. The Mytilidae are not rare in muddy places. There are few beaches where one does not find Pectens and there are two fine species of Spondylus. Many species of Oysters have been named and are somewhat difficult to determine on the strength of present descriptions and figures. The black pearl shell, M. mazatlanica Han. is less common and smaller than it once was. Pinna rugosa Sby. is probably the largest bivalve in these waters, perhaps in rare instances reaching if not exceeding 2 ft. in length.

The Arcidae are one of the best represented families and very much used as food. They are brought in by the boat load at Puntarenas and the shells are emptied and dumped on the beach. Lately these have been shipped by the carload for use as oyster shell on chicken farms. I think they have had some limited use as paving material.

Some parts of the coast are difficult of access. Puntarenas is perhaps the easiest as it may be reached by sea, air, or railway. It is a poor collecting ground having only sand and mud beaches. At certain times some species come up to spawn in shallow water or for other migratory reasons and can then be taken between tides. The mangroves are full of Littorinas above water, and many other things below, including Murices, Naticas etc. The mud bars in the river are filled with Natica and Cerithium to say nothing of many bivalves. With a boat and a dredge and screens it is hard to say what might not be found there.

Another little place near Puntarenas is called Boca de Barraura. This has a smaller river which offers Neritinas and a stony bar just outside is alive with Anachis of several species, Neritas, Thais kiosquiformis and Cymia tectum. Iphigenia altior is also dug here in quantities for table use. How it can bury itself so tightly among those rocks is a mystery to me. Across the river the coast is rockyfor some distance reaching the next port, Caldera. I have not collected there but hope to do so.

The Gulf of Nicoya has many river mouths and a good deal of muddy coast mostly covered with mangroves. There are some islands, however, that should offer good collecting.

On the outer or Pacific coast of Guanacoste there are many famous beaches, some of them type localities for various species. El Coco Bay is good collecting ground and better yet is Culebra Bay, just around a headland. This is a fine camping place except that one must carry drinking water. I got most of mine by eating oranges and bananas. Farther north are places I have not visited, Naranjo and Santa Elena Bay, just south of the Nicauraguan border where are some villages one known here as Port Parker. Farther south are such places as Pto. Portrero, El Conchal etc. From Caldera south the coast is less well known to conchologists until one reaches Golfito, a little pocket in the inner coast of the Gulf of Dulce. The United Fruit Co. has a plantation there and boats go regularly from Puntarenas. It is said to be a fine place to collect and is near the Panamanean frontier.

I feel that neither in this article nor in my collecting have I even scratched the surface, and I also feel that these coasts have never been adequately worked. Of course, all the more common and some of the rare species have been described and reported but the general information which one may get about these places is fragmentary and only true of certain places at certain times. It would be easy for a man with money and equipment to spend a lifetime there and he would learn something new every day. I have found it very profitable to watch the hermit crabs in the late evening or early morning and when one can be caught on the beach at that time when they show themselves in greatest numbers it is possible to get large numbers of them by throwing orange peels on the beach. Any other food or carrion of any kind which they like will get the same results. They use practically all the univalve species and if one can get to see them in large numbers it is not difficult to learn what may be expected. I think they would furnish a fair guide for dredging when their shells are too worn for collecting.

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The Nautilus, Vol. 57 No. 1, July issue has just been received. All west coast collectors will find a very fine article " Traveling and Collecting in Mexico" by Mr. A. Sorensen.

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California Fish and Game, Vol. 29, No.3, July, 1943 has been received. Among other interesting articles is one on mussel poisoning by Mr. Brian Curtis.

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We were flattered to hear that these informal Minutes are being catalogued by the Zoological Library of the British Museum.

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TYPES

Several of our members have stated that they are somewhat confused by the terminology of types. This is understandable and while far too large a subject to cover adequately in these few paragraphs, I shall make a few references here on this subject.

D.L. Frizzell, " Terminology of Types", American Midland Naturalist, vol.14, (1933), no.6, pp. 637-68. This paper lists over 230 different types and perhaps a dozen or more have been proposed since. However, certain types are recommended for adoptionand these are published later in Schenck and McMasters work from which I shall make a list below. This list should cover all types that are really essential. Of course, some of us will find in our collections specimens labelled for example " metatype". According to accepted usage, a metatype is a specimen identified by the author of the species. The term was earlier used in a different sense, however, and it conveys little, essentially, beyond " homeotype", a specimen compared with the type by a competent observer.

Schenck and McMasters, " Procedure in Taxonomy",Stanford University Press, 1936. The following table is copied from this fine work,pages 6 and 7.

Table of Type Terms

Types of Families

Type-genus: the genus upon which a family is based.

Type of Generic Catagories

Genosyntype: one of several species included within a genus at the time of its proposal, if none was designated as genotype.

Genotype: the single species upon which a genus is based.

Types of Specific Categories

Primary types (chief purpose: the evaluation of specific names):

Syntype: one of several specimens of equal rank upon which a species is based.

Lectotype: a specimen, selected from a syntypic series, upon which a revised species is based.

Holotype: the single specimen taken as " the type" by the original author of a species.

Paratype: a specimen, other than the holotype, used as a basis of a new species.

Neotype: a specimen selected to replace the holotype, in case all type material of a species is lost or destroyed.

Secondary types (comparative material used to check published identifications and to extend knowledge of the species.)

Hypotype: a described, figured, or listed specimen.

Topotype: a specimen from the type locality of a species.

Homeotype: a specimen compared with the type and found to be conspecific with it.

Reproductions (for distribution of facsimiles of rare specimens):

Plastotype: a cast of a type.

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J.Q.B.

We have a long letter from our secretary, Mrs. Effie Clark, who is now vacationing with her son in Yuba City, Calif. Let us hope we have not lost our secretary permanently, but a return to ' ration stamps etc.' after, well here are just a few of the titles in her letter " march pulletts", 3 eggs for breakfast, spring roosters, fruit ripening on every side, beans, corn,beets, turnips etc."

Dr. Myra Keen, Box 1563, Stanford University, writes that she has been very busy and among other things has been putting the last refinements on a new paper on mollusca soon to be published and running into some 600 pages. Sounds more like a book than a paper.

FURTHER NOTES ON MELAMPUS

by Joshua L. Baily Jr.

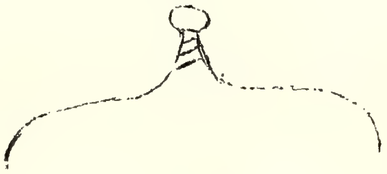
In a recent number of the minutes of the Conchological Club of Southern California there appeared an article by the Chaces on the marine Basommatophora of this region. The Basommatophora are a small group, but a very interesting one, inasmuch as whatever we can learn about its evolution from a study of one family seems to contradict everything we learn from the other families comprised in the group.

It is not my intention to recapitulate here the various items of information that one may find in the authoritative works of reference about the Basommatophora, but merely to report some of my own observations of the genus that received the least comment in the article referred to.

My interest in Melampus dates from the time that I read in the Cambridge Natural History that the nucleus of this genus was hyperstrophic. At that time I decided that some day I would make an investigation of this matter myself, but it was not until last year that I was able to undertake it. So far the results have been inconclusive.

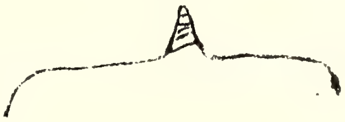
The spire of Melampus is dome shaped. The outline of the upper part of the shell is something like this :

The suture is completely obliterated except on the later whorls and the apical region is as smooth as a hen's egg. The need of young specimens for examination was apparent. From the drift of False Bay a few young specimens were obtained and a microscopic examination revealed a produced spire somewhat as follows:

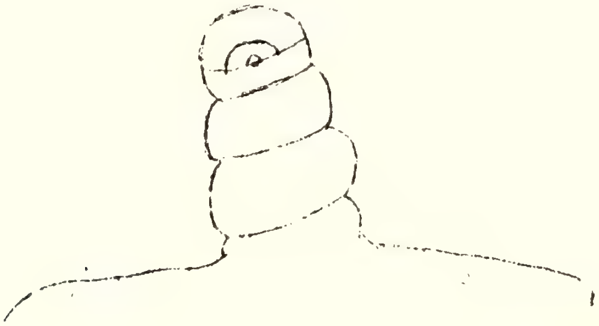


Under the microscope the tip of the apex appeared to be covered with a terminal cap, suggestive of the well known apex of the genus Cymbium, which ends in a marble-shaped structure that represents that part of the shell that was already formed when the egg hatched. It was a surprise to find a similar structure in Melampud.

By immersing the apex in acid for about a second this apical covering can be loosened and removed. The outline will then be approximately this:



But again it is impossible to distinguish the nuclear spiral because the nuclear axis is at right angles to the adult axis, and about half of each nucl whorl is imbedded in the earlier post embryonic whorls. By carefully rotating the shell about the adult axis I eventually got it oriented so that I was able look down onto what I thought was the nepionix apex. Greatly magnified it look about like this:



I was able to make out part of what I considered to be the embryonic suture, but I was unable to see enough of it to observe whether it was sinistral or dex--tral.

The next step was to remove the nucleus from the later part of the shell in which it was imbedded. Here my tecnique failed. Every specimen was broken in the attempt, so that my observations came to an unsatisfying end here.

There are two methods of proceeding further. One would be to collect several hundred specimens in the hope that in a few of them the nepionic whorls might be removed unbroken; another would be to discover the eggs of Melampus and hatch them in an aquarium. Personally I haven't the slightest notion as to when Melampus breeds, but it occurs to me that perhaps the members of the Conchological Club of Southern California who spend more time on the beach than I do might perhaps find this out, and I can assure you that any one who watches the hatching of a Melampus egg under the microscope will be well repaid for his trouble, and if any of you do find them I would certainly make the trip up from San Diego to see them.

Joshua L. Baily Jr.,
Natural History Museum,
Balboa Park,
San Diego, California.

Cancellariidae by Mrs. E.P. Chace

At the last meeting of the club Mrs. Chace gave a very interesting talk on this family. A great many fine mounted sets of specimens were used for illustrations and discussed freely. It was rather an extemporaneous discussion than a paper and the following notes represent but a small part of the subject.
Genus Admete, Kroyer1842- Tryon says " This genus represents Cancellaria in boreal seas as Trophon replaces Murex", a remark which becomes particularly interesting when we note that fully half of the species of Admete from this coast come down to Mexican waters and at least three are not listed from north of Monterey. Admete is more common here as a Pleistocene fossil than living.
Genus Cancellaria Lamarck 1799- I think C. cooperi and C. crawfordiana are so distinct that there is no confusion about them, but when we take up the fossils we are not so fortunate. Our most common one (at least in the Pleistocene) seems to be C. tritonidea Gabb, 1869. It is an extremely variable species. Arnold says of it " quite variable in regard to the prominence of the nodes, amount of angulation of the whorls, and the shape of the aperture. Any one not possessing a series showing the connection between the two extremes might think them different species". And there have been many varieties named. Grant and Gale retain 5 varietal names and discard more, but for me their most interesting remark is this (p. 621) " C. cassidiformis Sowerby 1832 is a close relative of C. vetusata and C. tritonidea. Dall stated in 1891 that C. cassidiformis occurs in the Miocene or Pkiocene formation of Santa Barbara county and that C. tritonidea and C. vetusta were based on a young and a very aged specimen respectively of this variable species". Dall seems to have repeated this statement much later. Grant and Gale remark " This is a rather extreme view". Personally I have not seen enough material of the living species to form any opinion on the matter, but it should be notedthat if these three species are all the same thing then Sowerby's name cassidiformis must be used as it has over 30 years priority.

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EXCHANGES

Wanted- Helminthoglyptinae and western Polygyridae, especially topotypic material. Can offer many duplicate land shells including paratypes of Naesiotus from Ecuador; marine shells from Chesapeake Bay and many species of mussels from Scott Co., Virginia, Tenn. and Texas.- Ralph W. Jackson, Route No. 1, Cambridge, Maryland.

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Mrs. J.M. Hackney, 1333 Cornwall Place, Norfolk, Virginia but for the summer addressed at Atlantic Beach, North Carolina- has duplicate East Coast shells for exchange with those interested.

Pfc. Glenn R. Webb, 35363604, Medical Section, 926th Engineer Avn. Regt., Army Air Base, Richmond, Virginia. " This is merely a note to acquaint you with my new address. However, as it is merely temporary, I suggest using my home address, Mr. Glenn R. Webb, Ohio, Illinois. The last issue of the club minuites reached me here, however, after being forwarded from my last station. Conchologically speaking my present station is rather barren. Several Phylomycus carolinianus , a few Triodopsis albolabris, one Strobilops sp. and the ubiquitous Zonitoides arboreus are the meagre results of local collecting. The limits to the list are as much resultant from lack of time as from poorness of fauna".

Mrs. Hattie Gemmell, 1304 Magnolia Ave., San Jose was our guest on a recent week end. Mr. and Mrs. E.P. Chace also dropped in and a good old shell talk was enjoyed.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

September 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held on September 26, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the August Meeting, 1943

In the absence of the president, Mrs. E.P. Chace, vice-president, presided. Mrs. Irene Baker acted as secretary. The minutes of the previous meeting were passed as printed. There were no reports of committees. John Burch called attention to the latest issue of the Nautilus as well as Johnsonia #10.

George Willett brought up the subject of the need for the work of the International Committee to be carried on. There was considerable discussion on the function of these men and the practicability of a national committee acting in the interim.

There being no further business the meeting was turned over to the program chairman, Dr. H.R. Hill. Dr. Hill explained that the speaker of the day, Mr. E.P. Baker was unable to be present since he was required to remain on duty at the airplane plant where he is employed.

Mrs. Mary Cornett reported on her recent trip to the Atlantic coast.

Miss Edna T. Cook reported on a recent trip to Weldon Canyon and passed around some very interesting fossils collected on the trip.

John Burch spoke of recent collecting during the low tides. A general discussion of systems for labelling and cataloguing followed and the meeting was then adjourned.

Mrs. Irene Baker, sec. pro. tem.

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A postcard was recently received by Mrs. Paul D. Bunker of 538 S. Van Ness Ave., Los Angeles, from her husband, Col. Paul D. Bunker, who commanded artillery at Corrigidor before its capture.

The message read: " I am interned at Taiwan (Formosa). My health is usual. I am working. Please see that taxes are paid. Sell apartment(in Washington). Take care of your health. My love to you and all the children." The card was written in her husband's handwriting and was mailed Feb.20, Mrs. Bunker said.

General Bunker is an old time member of the Conchological Club of So. Calif.

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Johnsonia, No. 10 " The Genera Fissurella, Lucapina and Lucapinella in the Western Atlantic" by Isabel Perez Farfante has been received. The twenty pages make an exhaustive work on this group.

The Journal of Conchology, Vol.22, No.2, 29th July, 1943 has been received. This is the organ of the Conchological Society of Great Britain and Ireland. This issue is largely a continuation of the fine work by Hugh Watson on the British non-marine mollusca.

Professor Gordon H. Ball of the University of California at Los Angeles has written us the following letter. Any of our members able to assist him will please communicate with him directly. The letter follows:

" I have received a letter from the United States Public Health Service requesting information regarding the distribution of planorbid snails in this area, and also asking for the collection of living specimens to be sent back to Washington. The Health Service will provide mailing cartons and pay air-mail postage. This is a matter of considerable urgency, because of the possibility of some of these snails serving as hosts of parasites brought back to this country by returning soldiers.

Professor U.S. Grant of the Department of Geology at U.C.L.A. has suggested that you or some other member of the Conchological Club of Southern California might aid us in this important work. If any one of your group can collect live specimens or can provide distributional data for the planorbids of this region, could you let me know as soon as possible ? The Public Health Service is particularly anxious tp obtain specimens of Helisoma tenue (Philippi)."

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Homer V. Geib, Airmen's Club, 3300 India St., San Diego, Calif. wrote us an interesting letter. He has been doing some collecting and has added a number of California species to his collection. However, another interesting note was the following: " Some of the Palm Beach, Fla. area enthusiasts have started a club, as you perhaps have heard. The best that I could wish them in their efforts is that they will have as happy a result as yours. Since talking to you I can faintly appreciate how much work and cooperation is required. But the results are worth it."

Thank you, Homer. And we would all like very much to hear all about the newly organized Palm Beach club.

Dr. S.S. Berry is now spending the summer months at his ranch, Winnecook Ranch, Harlowton, Montana.

Mr. John D. Parker , an associate member of our club who we all enjoyed very much while he was stationed at Fort McArthur while serving in the army here, is now a Benedict. We have the announcement of the marriage of Mr. John Dyas Parker and Miss Kathleen De Groot of Kansas City, Missouri. We sincerely trust that the new Mrs. Parker will enjoy shell collecting. The address given is 309 North Fourteenth St., Muskogee, Oklahoma.

Mr. D. Thaanum, 43 Coelho Way, Honolulu, Hawaii has an original expression of our common complaint. "... I decided I just must try to get a look at a " new" shell before the second year of shell stagnation runs out. Maybe you can help me ? First I'd ask you to give $5,00 to help with the publication of your club proceedings; I have received these regularly and enjoyed them very much--not least the occasional mention of old exchange friends still with us- many of them have unfortunately passed on."

Pfc. Glenn R. Webb, 35563604, H. & S. Med. Det., 926th Engr. Avn. Regt., c/o Postmaster, New York, N.Y. A War Dept. postal card recently received gives us the above address for Glenn. His friends may now well wonder just where he is studying shells.

Fred Barnett, 80 62nd Pl., Long Beach, Calif. We are advised that Fred has been given a promotion and is now Chief Bosun's Mate. Congratulations- Fred.

Dr. William L. Lloyd, Cabrillo Marine Museum, San Pedro, Calif. Dr. Lloyd writes that the Cabrillo Museum is now building up a conchological library as well as their fine collection.

Mr. W.J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. has been studying the introduced species in his state of Washington. Dr. G.D. Hanna, California Academy of Science, published a fine paper on " Exotic Mollusca in California", Bulletin of the California Department of Agriculture, Vol.28, No.5, published in Sacramento, Calif. May, 1939.

OTHER SPECIES OF LAND SLUGS FOUND IN THE PACIFIC COAST STATES

By Wendell O. Gregg, M.D.

Twenty five species of slugs are known to occur in the Pacific Coast states. Of these eleven species are introduced and fourteen are indigenous. In a previous article entitles " Notes on Land Slugs of Southern California" (Minutes of the Conchological Club of Southern California, No. 25, pp. 3-8.), eight slugs (three native and five introduced) which occur in Los Angeles and Orange counties were listed. The remaining seventeen species are here listed with notes on distribution and distinguishing characteristics along with briefed descriptions of the several genera.

Family LIMACIDAE

Derooeras laeve (Muller), 1774

Range: Palaearctic. Introduced into a number of countries of temperate climate. This species has been confused with other species of Deroceras, consequently its exact distribution can not be stated with certainty. Dr. H.B. Baker states, " A study of the literature on slugs tantalizes one with the paradox that the United States is about the only region of the habitable globe from which D. laeve is never reported ..." Introduced into California, Deroceras laeve is very abundant in the San Francisco Bay region. It is reported as far south as Salinas, Monterey county (W.H. Lange).

Deroceras laeve is distinguished from D. gracile by its larger size, comparatively longer neck, and chisel-shaped tail. Internally it is characterized by a hammer-shaped penis with three or four tubular glands.

Family ARIONIDAE

Genus Arion Ferussac, 1819. Mantle shield shaped . Dorsal surface of the body convex from side to side. There is no suggestion of a dorsal keel in adult slugs. Pneumostome located along the right border of the mantle somewhat anterior to the middle. A cleft runs from the lower margin of the pneumostome to the lower border of the mantle. There is an open caudal mucous pore. The sole is not tripartite. It extends somewhat beyond the body.

Arion ater (Linnaeus), 1758.

Range: Europe. In North America it has been introduced and is locally established in the New England states. It is reported from Detroit, Michigan and from Multnomah county, Oregon (B.G. Thompson). It is said to occur in Seattle, Wash. (E.P. and E.M. Chace).

Known as the black slug, its color varies thru all shades of black, brown, orange, yellow and even white. It may be recognized by its large size and by the anterior position of the pneumostome. Full grown specimens reach a length of five inches or more.

Arion hortensis Ferussac, 1819.

Range: Europe. Introduced into Greenland and locally in North America. In the United States it has been reported from Boston, Mass.; Poughkeepsie, N.Y.; Wisconsin; Seattle, Wash.; Multnomah county, Oregon; and is well established in the San Francisco Bay region, California.

It is said to reach a length of 30 mm. Most specimens seen are considerably smaller. The dorsal aspect of the animal is dark gray with lateral bands of lighter gray. The most conspicuous feature which serves to identify this species is the bright orange colored mucous slime which is secreted over a nearly white sole.

Arion circumscriptus Johnson, 1828.

Range: Europe. Introduced locally in North America. It has been reported from Goat Island, Niagra Falls, New York; Ann Arbor, Michigan (Walker); Indianapolis, Indiana (Glenn Webb); and the San Francisco Bay region in California (A.G. Smith).

This slug is somewhat lighter in color than *A. hortensis.* It may be distinguished by the lack of any suggestion of orange or yellow color of the mucous which is secreted over the sole.

Arion intermedius Normand, 1852.

Range: Europe. Introduced into New Zealand. Introduced and fairly common in the San Francisco Bay region, California. It has been reported from Santa Paula Canyon, Ventura county, Calif.

This species is easily recognized by its light yellow or nearly white color, There are lateral bands of light gray in some individuals. An outstanding characteristic is the yellow mucous slime which is secreted over the surface of the white sole.

Genus *Prophysaon* Bland and Binney, 1873. " Slugs with anterior shield-like mantle in which the flat, non-spiral shell is completely buries, the breathing pore in front of the middle of its right margin; genital orifice behind and near right tentacle. Foot reticulated, the areolae subdivided (except in *coeruleum)* ; the coloration in two or three longitudinal bands on mantle or mantle and foot, or monochromatic. Foot-margin wide, pedal furrows deep, with no noticeable caudal pore (or only a small slit, in *P. foliolatum,* hardly or not visible in alcoholic specimens). Sole not in the least tripartite. Tail usually showing an oblique constriction at from the posterior third to sixth of the animal's length, marking the place where self-amputation takes place." Pilsbry.)

Prophysaon andersoni (Cooper), 1872.

Range: Vancouver Island south to Santa Clara county, California. In the north it extends as far east as Lake Coeur d' Alene, Idaho.

Recognized by the diamond-mesh reticulations, the two dark bands on the mantle and the light dorsal stripe posterior to the mantle. It is smaller than *P. foliolatum* with a very much shorter amputatable tail segment.

Prophysaon foliolatum (Gould), 1851.

Range : Puget Sound region. Possibly Alaska.

This species differs from *P. andersoni* in being larger, more elongated, with the portion of the tail subject to amputation longer than that of *andersoni.* The mucous pore at the tip of the tail of *foliolatus* will definitely distinguish it from any other described *Prophysaon.* In some specimens the light dorsal line is indistinguishable.

Dall gives the range of *Prophysaon andersoni* as California to Alaska. Specimens of *Prophysaon* collected by George Willett at Unalaska Island are very different from *andersoni* but conform very well with descriptions and figures of *P. foliolatum.*

Prophysaon humile Cockerell, 1890.

Range: Puget Sound region, Washington and east to Lake Coeur d' Alene, Idaho.

General appearance similar to *P. andersoni.* It differs in having two conspicuous dark lateral bands and one dorsal band behind the mantle. The anterior portion of the mantle is free back as far as the breathing orifice. In other species the attachment is somewhat anterior to the breathing orifice.

Prophysaon coeruleum Cockerell, 1890.

Range: Puget Sound region, Washington and south to Portland, Oregon.

" Color blue or slate-blue (sometimes brown), somewhat paler at the sides. Back with close, deep longitudinal grooves, which, on the sides, become oblique and more spaced, and more anteriorly they radiate vertically below the mantle; transverse grooves uniting the longitudinals comparatively few and shallow." (Pilsbry).

Genus *Hesperarion* Simroth, 1891. " Slugs with the usual small, anterior, shield-like mantle, completely buried, non-spiral shell plate, and long body-cavity excavated to end of tail. Breathing pore somewhat behind middle of right mantle edge. Genital orifice distant from tentacle, below the anterior margin of mantle. Foot with longitudinal grooves, becoming oblique at sides, the foot margin moderate, pedal furrows deep, meeting in a very conspicuous, subtriangular, posteriorly guttered tail pit. Sole rather indistinctly tripartite, the areas not defined by longitudinal grooves. Jaws with coarse ribs." (Pilsbry).

Hesperarion niger (J.G. Cooper), 1872.

Range: California, from Colusa county south to Monterey county.

One other species of *Hesperarion* is known to exist, *H. hemphilli* (W.G. Binney). It has been previously listed with the land slugs found in Southern California. *Hesperarion niger* is larger and less elongate than *hemphilli.* The ventral surface of the sole of *H. niger* is conspicuously marked with black or gray dots while the sole of *hemphilli* is buff to white and unmarked.

A digitiform atrial appendix is present in *niger* but not in *hemphilli.*

Genus *Ariolimax* Morch, 1860. Large slugs, up to 190 mm. in length when fully extended. " Body limaciform, its posterior half more or less keeled on the back; foot margin defined by deep pedal grooves, deeper toward the more or less distinct caudal mucus gland. Mantle oval, about one fourth as long as the entire body, finely granular, the respiratory ofifice at its posterior third near the right edge. Genital orifice behind the right eye tentacle. Orifice of the suboral gland very broad. Integument scored by numerous grooves, longitudinal behind, obliquely descending below the mantle and for some distance along the flanks. Sole tripartite, the divisions rather indistinct; alcoholic specimens having the median band smooth, lateral bands finely transversely wrinkled." (Pilsbry).

The genitalia are crowded forward in the body cavity. " The suboral gland is about half as long as the body, and lies free, not imbedded in the muscles of the foot." (Pilsbry). The intestinal tract has one anteriorly directed loop.

Ariolimax columbianus (Gould), 1851.

Range: Pacific coast of North America from Sitka, Alaska (G. Willett) south to San Luis Obispo, Calif. (Wilcox). In California it has been found as far inland as Columbia, Tuolumne county (Hanna and Rixford). Also Santa Cruz and Santa Rosa islands.

Color varying from olive brown to straw color. There is a spotted form with a variable number of large black spots. There may be a single black spot located somewhere near the center of the mantleor a number of spots distributed irregularly over the animal. Entirely black specimens have been seen. The mantle is free anteriorly for about one third of its length. " The back shows a pattern of longitudinal grooves which are often more heavily pigmented than the areas between. Short transverse grooves connect the longitudinal grooves but these transverse grooves are not differentially pigmented and are inconspicuous... There is a caudal pore at the posterior tip, which is plugged with a mass of spongy tissue." (Waste).

Internally this species is characterized by a thin walled penis which contains a thick walled " invaginated epiphallus". A short retractor muscle is inserted into the apex of the penis. There is no enlargement of the vas deferens.

Ariolimax californicus Cooper, 1872.

Range: San Francisco Bay region, California. Authentic records are confined to San Francisco, San Mateo and Santa Clara counties.

Color, bright yellow brown, without spots or bands. Longitudinal grooves not differentially pigmented as in columbianus. Mantle is free anteriorly for about one fourth of its length. Caudal pore plugged with a mass of spongy tissue as in columbianus.

The vas deferens is enlarged into an epiphallus, then attenuates to a fine tube where it enters the end of the penis. Retractor muscle is broad, attached some distance from the end of the penis. The penis has a thick muscular wall and it is usually attenuate proximal to the attachment of the retractor. The " invaginated epiphallus" is filiform and may extend within the penis nearly as far as the insertion of the retractor muscle.

Ariolimax (?) steindachneri Babor, 1900.

Range: Puget Sound region. Exact locality unknown.

Externally this species resembles Ariolimax columbianus except that the well developed caudal pore is an open slit, not plugged with a mass of tissue.

This little known slug has some internal characteristics which suggest a relationship with Hesperarion. Junius Henderson suggests that perhaps it may have been overlooked because most collectors are not aware that two large species have been described from the Puget Sound country.

Genus Hemphillia Bland and Binney, 1872. " Slug-like with mantle conspicuously elevated (in alcoholic specimens) into a nonspiral visceral hump; the shell a slightly convex, non-spiral plate partially exposed, its edges buried in the mantle, which is very broadly produced beyond the shell on all sides. Breathing pore behind the middle of right margin of mantle. Genital orifice behind the right tentacle. Foot radially grooved and reticulate above, the foot margin wide, conspicuous; pedal furrows deep, meeting in a mucous pore at the tail, or without tail gland. Sole not in the least tripartite.

" Viscera elevated into the dorsal hump, the body-cavity not extending back of it into the tail which is solid." (Pilsbry).

Hemphillia glandulosa Bland and Binney, 1872.

Range: Astoria, Oregon, north to Vancouver Island, British Columbia.

" Color in alcohol blackish above, or yellowish with black spots; the edge of the mantle, sides of foot below mantle, foot margin and sole yellowish shell yellow. Mantle extension densely papillose in front of the shell and at sides. Breathing pore median on the right side. Genital orifice near right tentacle, a groove running from it toward the breathing pore. Foot obliquely grooved and rather coarsely reticulated, pinched up into a high, acute keel posteriorly, this keel declining and terminating in a prominent horn like process at the end. Foot-margin rather wide, vertically grooved as usual. Pedal furrows scarcely rising at the tail, meeting in a caudal pore immediately below the " horn". Sole transversely wrinkled, the wrinkles bent backward mesially, as in Prophysaon. Length 10 to 13 mm.

" Shell convex, with yellow cuticle, thin calcareous layer and posterior nucleus." (Pilsbry).

Hemphillia malonei Pilsbry, 1917.

Range: Mt. Hood region, Oregon, also Vancouver Island, British Columbia.

Mantle smooth with a very large opening exposing shell. No " Horn" at tail. A single specimen was taken by the writer along Highway "35" near junction with road to Cloud Cap Inn. When at rest the " hump" was not noticeably elevated but whendisturbed the animal elevated its hump very conspicuously and also thrust its tail rapidly from side to side. When at rest the shell had been entirely covered by the mantle but after raising the hump the edges of the mantle opening began to contract exposing the shell. This specimen, now preserved in alcohol, measures 30 mm in length. The opening in the mantle exposing the shell, 3 x 7 mm.

Genus Binneya J.G. Cooper, 1863. " Somewhat slug-like, with elevated, subspiral visceral hump and external shell, subcentral on the back; mantle broadly produced beyond the shell, not reflexed over it at edges; breathing po submedian or behind middle of right margin of mantle, a small rounded left and somewhat larger right cervical mantle love on each side of it; genital orifice behind the right tentacle; foor radially grooved and reticulate above, the foot margin narrow; pedal grooves deep, without a tail pore; sole tripartite, the areas separated by longitudinal grooves; shell Vitrina-shaped, with the first (nepionic) whorl distinctly demarked from the following, and strongly sculptured.

" Viscera elevated into the dorsal hump, the body cavity not extending back of it into the tail, which is solid." (Pilsbry).

Binneya notabilis J.G. Cooper, 1863.

Range: Santa Barbara Island off the coast of California. Fossil, San Nicholas Island (Kanakoff). It does not occur on the mainland of California.

Other species of Binneya are found on Guadelupe Island off the west coast of Mexico and also in the states of Vera Cruz and Chiapas, Mexico.

Family Testacellidae

" Animal slug-like, bearing a small ear-shaped shell near the posterior extremity of the body. No jaw. Lingual teeth long and narrow, sharp pointed, in oblique series." (Tryon.)

Genus Testacella, Cuvier, 1800." Animal: Limaciform, subcylindrical, tapering anteriorly; tentacles simple; mantlesmall, posterior, quite near the tail, covered with a small external shell; no longitudinal furrows above the margin of the foot, and no caudal mucous pore; no distinct locomotive disc; external respiratory and anal orifice at the posterior right edge of the mantle under the peristome of the shell; combined generative orifice behind and below the right eye peduncle. Shell: External, rudimentary, imperforate, ear shaped, with a subspiral, posterior nucleus." (Tryon).

Testacella haliotidea Draparnaud, 1801.

Range: Southern Europe; Great Britain and North America (introduced); Canary Islands." (F.C. Baker). In North America it is known principally from specimens in greenhouses. A.G. Smith has taken a number of specimens from a garden in Berkeley, Calif.

" Two prominent dorsal furrows extend most of the length of the animal. T. haliotidea is characterized by the approximation but not junction of these furrows at the anterior margin of the shell".(R.J. Waste). These animals are carniverous and feed principally, if not entirely on earthworms.

(Family VERONICELLIDAE)

(Veronicella olivacea Stearns, 1871.)

Range: Nicaragua. Binney reports a specimen taken at Lobitos Creek, 40 miles south of San Francisco, Calif. The Lobitos specimen apparently represented an importation which never became established as there are no further records of this species from California.

Veronicella has a mantle covering the entire dorsal area of the body and curving under comprising the lateral areas of the sole; head is distinct and capable of being retracted under the mantle. Organs of generation separate and distinct, the male organ protruding at the base of the right tentacle; the female opening about the middle of the right side. Shell absent.

COMPLETE LIST OF SLUGS FOUND IN THE PACIFIC COAST STATES-

* *Limax maximus* Linnaeus, 1758
* *Limax flavus* Linnaeus, 1758
* *Limax marginatus* Muller, 1774
* *Deroceras agreste* (Linnaeus), 1758
Deroceras laeve (Muller), 1774
* *Deroceras gracile* (Rafinesque), 1820
* *Milax gagates* (Draparnaud), 1801
Arion ater (Linnaeus), 1758
Arion hortensis Ferussac, 1819
Arion circumscriptus Johnston, 1828
Arion intermedius Normand, 1852
Prophysaon andersoni (Cooper), 1872
Prophysaon foliolatum (Gould), 1851
Prophysaon humile Cockerell, 1890
Prophysaon coeruleum Cockerell, 1890
* *Anadenulus cockerelli* (Hemphill), 1890
Hesperarion niger (J.G. Cooper), 1872
* *Hesperarion hemphilli* (Binney), 1876
Ariolimax columbianus (Gould), 1851
Ariolimax californicus Cooper, 1872
Ariolimax (?) steindachneri Babor, 1900
Hemphillia glandulosa Bland and Binney, 1872
Hemphillia malonei Pilsbry, 1917
Binneya notabilis J.G. Cooper, 1863
Testacella haliotidea Draparnaud, 1801

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* Species marked with a (*) are discussed in the paper previously referred to (See " Minutes" No. 25, pp.3-8).

ACKNOWLEDGMENTS

In my studies on slugs I have been aided by a number of persons. I am particularly indebted to Allyn G. Smith of the California Academy of Sciences for a vast amount of material, mostly living specimens, collected in the San Francisco Bay region. Mr. Smith has also furnished me with typewritten copies of certain sections of publications otherwise not available to me. I am indebted to Dr. G. Dallas Hanna of the California Academy of Sciences for examining specimens of *Anadenulus* and comparing them with Hemphill's type lot. Dr. Howard Hill of the Los Angeles Museum made available to me for study the material in the collection of that institution. Dr. H.A. Pilsbry has kindly examined certain of my material from this locality. Dr. Harry Lange of the Division of Entomology and Parasitology, University of California, has aided by examining certain of the material collected in Southern California. Mr. E.P. Baker, E.P. and E.M. Chace and other members of the Conchological Club of Southern California have aided in collecting many specimens of the more common introduced species and furnishing distributional data on same. Others, as indicated, have aided in furnishing data.

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ERRATA

In my previous article entitled " Notes on Land Slugs of Southern California, " Minutes, No. 25, pp. 3-8, the following corrections should be noted:

Page 4, par.2,line 7 should read "respiratory orifice, or pneumostome..."

Page 4, par.3, line 9 should read "vening portion, or neck."

Page 6, par.6, line 2 should read " the dorsal wall of the body cavity.No atrial or penial..."

Page 7, par.8, line 1 should read " Milax Gagates (Draparnaud),1801.

Page 8, par.4, line 8 should read " Carbon Canyon, Puente Hills, Orange County; Limestone Creek above Santiago ..."

William Keith Emerson, 3044 29th St., San Diego, Calif. A recent long and interesting letter contained the following notes: " I have collected some shells in Mission Bay that do not appear on either Miss Wilson's or Mr. Morrisson's lists that were in issue #19. They are: Acteocina carinata Carpenter Kellia suborbicularis Montagu, Lithophaga plumula Hanley, and Lasaea cistula Keen. ... A bivalve that is becoming common in Mission Bay is Lasaea cistula Keen. This is the first year I have found them there. ... Pecten latiauritus Conrad seems to be the most common bivalve found on the ocean and bay beaches in this region. The kelp is just covered with them, and the sand is also."

Dr. Wendell O. Gregg, 2200 S. Harvard Blvd., Los Angeles, Calif. (7). " The land snails that Limbaugh sent you (from Glacier Nat. Park) appear to be Oreohelix subrudis apiarium Berry. Will return them to you next meeting. The little snails that Mrs. Burch found in her lath house are Z. arboreus. Unusual to find them so close to human habitations here in southern California although I found one in my lawn when I lived in Montrose. The little fellow that Mr. Chace got in Banning Park, Wilmington is Oxychilus cellarius Muller. A few days ago I got an interesting letter from Glenn Webb.

T.D.A. Cockerell, 3920 Goldfinch Road, San Diego, Calif. We were pleased to hear that Professor Cockerell has entirely regained his health and is now making his permanent home in southern California. He inclosed a very interesting paper " Letters From Douglas Cockerell", Letchworth, England, to his brother in California."

Mr. Cockerell was particularly interested in the account of the rediscovery of Anadenulus cockerelli (Hemphill) as reported in the recent paper by Dr. W.O. Gregg " Land Slugs of Southern California".

Herman W. Miller, 4618 So. Figueroa St., Los Angeles 37, California.

It was certainly not our intention to omit Professor Miller's address in recent issues. His paper on " Shell Collecting in Costa Rica" brought quite a deluge of what I assume is fan mail. Anyway we just forwarded three and have another on our desk. We have just received an interesting letter from him which among others includes the following note: " I just stumbled on to the fact that Tellina crystallina Wood is found on both coasts. I have one I found in Costa Rica (West Coast) and I ran across a picture of it in Smith's East Coast Shells. It's a nice little shell and I hope to run into a colony with a dredge some day."

Mrs. Gladys R. Zook, 800 Sixth St., San Bernardino, Calif. " Some time I hope to join you in your meetings, but with the present gasoline situation that is impossible. The notes of the society are a stimulating addition to my " away from the beach" existence.

Frank Lyman, Lantana, Florida. Frank writes that he is working 18 hours a day with his shells and war effort. We thought we were doing fairly well with that 60 hours a week as a shipfitter, but we cant tie that one. Frank, you win the marbles. Welike your letterhead.

Dr. Merrill Moore, now Major Moore of the U.S. Army has sent us an interesting clipping from " The Auckland Star", New Zealand. He is continuing his work with shells over there in the cure of nervous and mental troubles.

This is cheerful news. We have with indignation overheard some of our intimates discussing what in this case would be a cure for the cure.

F.S. Webber, 271 Maple St., Holyoke, Mass. We were glad to hear from Mr. Webber and know that he is well and carrying on his correspondence and exchanges.

Dr. Fritz Haas, Field Museum of Natural History, Chicago, Ill. We were sincerely flattered to receive the following comment from Dr. Haas:" As to the last two Minutes, I can only tell you that their contents make them equal with the best publication of any conchological club. Let us hope that in the not too far future your conchological club will be able to have its minutes printed to make them vastly available to every friend of conchology."

MINUTES OF THE LONG BEACH SHELL CLUB

The members of the Long Beach Shell Club who were able to be in attendance, met at the home of Mrs. Grace Paxon Ferris, 5304 Appian Way, Long Beach for the September meeting. There were eighteen present.

The meeting was opened by the president, Ralph Borman, who asked that the minutes be read by the secretary, a s they had not been sent in time for the printing of the last minutes of the Los Angeles club meeting. The minutes were read and approved. A letter from one of the members was read telling of the death of Tom Sherrod, husband of our former secretary, Louise. Also the promotion of Fred Barnett, who is at present in the Coast Guard service, to Chief Boatswain.

Members of the Nomenclature Committee reported on Johnsonia, No. 10, off the press during the month of August.

The next meeting was announced for Oct. 3rd, at the home of our sponsor, Julia Ellen Rogers, 355 Junipero St., Long Beach, with Mrs. Linderman, hostess.

Jean Wilkins asked for the next meeting in the clear. As the program committee has the rest of the year planned for, this was turned over to them for next year's planning.

Dr. Howard Hill, chairman of our Program Committee, being unable to be prssent in person, had arranged for Mr. E.P. Chace to speak to us on the subject of Fissurellidae, and our president introduced him and turned the meeting over to him and his splendid array of illustrations.

Mr. Chace gave us a very interesting talk on the subject, giving special attention to our west coast specimens, and showing illustrations of those taken here and elsewhere. As Mr. Chace had this talk written it will doubtless be printed with this notice later. Sorry we cannot reproduce the fine specimens used to illustrate it.

Our hostess served us a delicious ice cream pie for refreshments as we further discussed fissurellidae, diadoras, Megathura, Puncturellas, etc. comparing specimens and asking questions. Many thanks, Mrs. Ferris, for your lovely hospitality and Mr. Chace for his interesting talk.

E.P. Baker- Secretary

* * *

Death of Colonel Paul B. Bunker, who was captured by the Japanese on Corrigidor, was revealed to-day in a telegram from the War Department to his widow, Mrs. Landon Bunker of 538 Van Ness Ave., Los Angeles, who was one of the last Army wives to leave the island two years ago.

Colonel Bunker commanded the heavy artillery on Corregidor and was previously listed as a prisoner of war. He was 61.

He was graduated from West Point in 1903 and was executive officer of the Southern California Coast Artillery Reserve before the war. He served as chief umpire in the war games held in California in 1939.

A son, Colonel William B. Bunker of the United States Engineers is stationed at Washington, D.U.

* * *

Mrs. Mildred Cannon, Route 1, Fort Pierce, Florida, will be interested in exchanging Florida species, marine, land, and freshwater for species new to her collection.

* * *

There will be several collectable tides in the month of October. The season of our best collecting is approaching.

Sterling Thomas Sherrod- 1878-1943

Mr. Sherrod died in a Long Beach hospital August 16 after a very brief illness. He had been a resident of Long Beach for the past twenty years. His wife passed away about a year ago. Both Mr. and Mrs. Sherrod were early members of the Long Beach Shell Club and were always enthusiastic collectors.

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Donald J. Zinn, 2nd Lt., AC, Thirty Second Altitude Training Unit, Las Vegas Army Air Field, Las Vegas, Nevada (of Yale University, New Haven, Conn.). We hope that Lieutenant Zinn will be able to pay us a visit our district. Any of our members able to supply the information asked for will please drop him a line. " I wonder whether you could give me any references to the Brachiopods and shells that I am liable to find in this region- particularly all Permian and Cenozoic forms. This is a grand area for fossil collecting if you can avoid being parched to a crisp."

EXCHANGE WANTED*

M.K. Jacobson, 455 Beach 139 St., Rockaway, N.Y.- " I should like very much to exchange common East coast for West coast molluscs. This summer I collected large quantities of Triodopsis tridentata, Carychium exiguum, Stenotrema hirsutus, Mesodon thyroides, Stenotrema fraternum, Triodopsis albolabris etc. at Peekskill, N.Y. In addition any common East coast marine shell can be obtained in large quantities... I will exchange eastern U.S. marine, land and fresh water shells"

W.J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. Mr. Eyerdam has been taking the baths at Soap Lake, Grant Co., Wash. While there he naturally did some collecting and writes the following: " I have been in that region before collecting plants and now have nearly all of the plants that occur in the region, about 400 species. I collected about 30 late flowering species on this trip and I also found some of the fossil deposits of Soap Lake. Henderson found only a few specimens each of Stagnicola couleensis F.C. Baker, Valvata humeralis californica Pilsbry and Parapholyx effusa effusa Lea , but I found a deposit above the highway on the S.W. end of the lake where they occured in thousands. Anodonta californica Lea, Physa diaphana Tryon, Planorbis trivolvis occidentalis Cooper, Lymnaea (Stagnicola) traskii Tryon were less common. A few specimens of Lymnaea stagnalis wasatchensis Hemphill , Planorbis (Gyraulus) vermicularis vermicularis Gould and a Pisidium were also taken. In all there were 10 species taken from the deposit which practically completes the known quota from Soap Lake,although there are a few others known from other deposits in the Grand Coulee."

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We wish to acknowledge with thanks the generous donations of the following to the costs of mimeographing these minutes: R.L. Cass, 5442 5th Ave.,Los Angeles 43, Calif.; Dr. W.O. Gregg, 2200 S. Harvard Blvd., Los Angeles 7, Calif.; W.G. Fargo, 506 Union St.,Jackson, Mich.; Ralph W. Dexter, Kent State University,Kent, Ohio; Mrs. Henry Jaeger, Haines City, Florida; Prof. H.B. Stenzel, Bureau of Economic Geology, The University of Texas, Austin, Texas; Fred Barnett, 80 62nd Pl., Long Beach, Calif.; C.L. Blakeslee, Pittsford, N.Y.; Dr. Myra Keen, Stanford University, Calif.; H. Bolgard, 319 E. 110th St., Los Angeles, Calif.; Mr. and Mrs. H.R. Turver, 127 Broadway, Santa Cruz, Calif.; Dr. B.R. Bales, 149 West Main St., Circleville, Ohio; Dr. Joshua L. Baily, 4435 Ampudia St., San Diego, Calif.; Ralph W. Jackson, Rt.1, Cambridge, Maryland; Mrs. J.M. Hackney, 1333 Cornwall Pl.,Norfolk, Virginia; Mrs. Hattie Gemmell, 1304 Magnolia Ave.,San Jose, Calif.; George Willett, Los Angeles Museum, Los Angeles, Calif.; Dr. W.L. Lloyd, Cabrillo Museum, San Pedro, Calif.; Dr. Fritz Haas, Field Museum of Natural History, Chicago, Illinois; M.K. Jacobson, 455 Beach 139 St., Rockaway, N.Y.; D. Thaanum, 43 Coelho Way, Honolulu, T. Hawaii; Lt. Donald J. Zinn, Las Vegas Army Air Field, Las Vegas, Nevada.

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We have just been informed that Dr. Maxwell Smith of Lantana, Florida has purchased the entire collection of our late member, Mr. W.H. Brown of Hermosa Beach, Calif.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

October 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held October 24, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Minutes of the September Meeting- 1943

The September meeting of the Conchological Club of Southern California was held on the 26th in the usual place with 19 members present. President Baker called the meeting to order at 2:45 P.M. In the absence of the secretary, Mrs. E.P. Chace was drafted as substitute.

The minutes of the August meeting were approved as printed. The committee on nomenclature and publications called attention to the fact that 3 numbers of Johnsonia have been issued recently. The membership committee presented the name of Mr. Chas. A. Allen, formerly of Honolulu, now of 920 W. 20th St., Los Angeles. Mr. Allen was unanimously elected to active membership.

Mr. George Willett reported that an Acteocina (sp. indet.) has been found subfossil near the Salton Sea verifying a report made some years ago by the late Fred Reed.

There was a discussion of the advisability of combining the meetings of the C.S.C. and the Long Beach Shell Club, possibly holding alternate meetings in Long Beach. Many of the members agreed that attending two meetings per month was difficult under present conditions but no action was taken.

Dr. H.R. Hill, as chairman of the program committee, then introduced Mrs. Mary Cornett as the first speaker of the day. Mrs. Cornett took as her subject Terebridae and illustrated her talk with some very fine specimens. One especially interesting point which she brought out was that when Dr. Reeve monographed this family he had access to the types or type material of 214 of the 240 species of Terebridae previously described and reduced these to 140.

Mr. Allen began his career as a club member by giving a most interesting talk on collecting in the Hawaiian Islands, illustrated with numerous fine specimens of his own collecting. At the close of Mr. Allen's talk, the club adjourned in the usual manner.

Mrs. E.P. Chace* Sec. Pro. Tem.

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Please mail all news about shells, shell publications, shell collectors shell trips and localities to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

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Mr. W.E. Griffith, 24 Melita St., Sliema, Malta- We received nice long letters from two of our friends in Malta. This is the best war news we have had for some time. They are very optimistic and looking forward to continuing their shell activities.

J.M. Grech, 59 Bihind St.,Ubaldesca Str.,Casal Paula, Malta, G.C.- Mr. Grech and family are also well and arranging further shell exchanges as soon as it is possible.

Mrs. Faye B. Howard, 212 N. Locust, Inglewood, Calif. " This will serve to inform you of my general trend back from the sticks".. " I hope to be at the next meeting of the club."

Mr. A.C. Burrill- , Missouri Resources Museum, State Capitol Bldg., Jefferson City, Missouri- " I am interested in all finds of shells and bones in caves, especially fossil shells and bones. I have a Paleontology Committee working on that line with the National Speleological Society. Have you any one interested in cave life ?"

W.P. Cook, 2966 Union St., San Diego, Calif.- Mr. Cook writes that he has just completed getting all of his small and medium sized specimens under cover . About the only conceivable advantage of the present dearth of shell activity seems to be that some of us may manage to get what we do have properly catalogued. Mr. Cook wishes to acquire some duplicate Cancellaria cooperi if any of our members can spare them. Thanks for the contribution.

H.W. Harry, Ph M 2/c, U.S. Naval Hospital, Corona, Calif. We have a letter to the effect that this is no longer his station but his mail will be forwarded until we can get a better address. He also includes the following note about:

Pfc. Glenn R. Webb, 926 Engr. Avn. Regt., H.Q.S. Co. Medical, A.P.O. 527, c/o Postmaster, New York, N.Y. " Glenn is in England and has been doing some collecting. Any of us with friends in England for him to contact might write him.

Miss Alice L. Waterbury, 2235 Norwalk Ave., Los Angeles, Calif. We were very glad to have a cheerful card from her recently.

Chester W. Melville, 20 Hammondswood Rd., Chestnut Hill, Mass. " Enclosed please find check for $2.00 to cover mailing charges on the minutes of the meetings of your shell club. We enjoy them very much and wish them to continue. We are leaving for Florida about the middle of December and shall spend the winter collecting on the Florida west coast."

The following are new members of the Long Beach Shell Club :

Abby H.C. Gorham, 365 Junipero Ave., Long Beach, Calif.
Lucille Tysseling, 853 Atlantic Ave., Long Beach, Calif.
Clara A. Linney, 2184 Pine Ave., Long Beach, Calif.
Miss Edith R. Rex, Avalon, Catalina Island, Calif.

D.L. Emery, 121 Twentieth Ave., South, St. Petersburg, Florida " I am trying to get as near a full set as possible of the west coast Haliotis. Have just added aulea and turveri. Expect a sorenseni next week. Do you know of any one who has a holzneri or imperforata to spare. I have the kamtschatkana, wallalensis, orcutti, bonita, splendidula, as well as those mentioned above and all our common ones. "

Mrs. H.E. Marsden, 759 N. Orange Drive, Los Angeles 38, Calif. " Although because of transportation and other problems of the present situation I have not been able to attend any meetings of the Conchological Club, I am still interested in retaining membership, and I am always glad to receive the minutes of the meetings. I am inclosing a check for $1.50, which will pay for some stamps."

Mrs. Ida Worthy, R.D. Patumahoe, Auckland, New Zealand. We were pleased to get a long letter from Mrs. Worthy advising that they are in good health but in the same position as the rest of us in being able to do little or no collecting. So she joins us in planning great things after the duration.

Naturalist's Directory, Box 208, Salem, Mass. We are in receipt of the announcement of a new edition of this publication. It is suggested that our members interested send in their names and interests.

James P. Conlin, 927 Tierney Rd., Ft. Worth, Texas. We were glad to hear from Mr. Conlin again and learn that he is still actively building his collection of shells, brachiopods, fossils etc.

Frank Lyman, Drawer 1412, Lantana, Florida. If you are not already on Frank's mailing list we suggest that his Shell Notes are well worth receiving and that you drop him a card requesting them.

Dr. Myra Keen, Box 1563, Stanford University, Calif. " From the mention in the last minutes of the discussion brought up by Mr. Willett at the August meeting of the club, I wonder whether the information concerning the re-organized International Commission of Zoological Nomenclature has reached you. We chanced to hear of it only on account of correspondence with the Secretary, Dr. Francis Hemming. In 1939 the Commission arranged to establish a permanent Secretariat in London, as the Smithsonian Institution was no longer able to underwrite the expense. The revamped Commission began issuing Opinions which were published in London, but the war has prevented distribution of them until now. Recently the Commission has established an official Bulletin, which may be received by subscription; in this bulletin problems which are referred to the Commission are to be given publicity. Thus far the Commission has issued Opinions 134-144. These may be obtained from the Publications Office of the Commission, 41, Queen's Gate, London, S.W.7. The total price for the eleven opinions is 19 shillings, 8 pence--- something around $4. As I recall it (I do not have a Bulletin at hand, as I am writing from home), the subscription price of the Bulletin is about $3.75 a year. Opinions 145 to 158 have been delivered by the Commission but are not yet printed. The Commission just now is making an appeal for funds to underwrite the publication of these and others.

It may now be told that Major Schenck is in Military Government. He is still in the U.S.A., busy studying at an advanced school, having finished the course at Fort Custer, Michigan.

Mackenzie Gordon was in for a few minutes one day last month. He has been on the strategic minerals survey in Arkansas for several months. He thinks he will be able to find time soon to work on west coast shells again and perhaps to finish up a couple of projected papers. I showed him the Minutes you had been issuing and he was immensely interested and pleased with them."

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Just noticed in the Los Angeles Herald and Express " 50 years ago today, October 14, 1893" the following:

" The Los Angeles Conchological Club held its first field day at Long Beach a few days ago, followed by a meeting in the evening. The object of the club is to study and classify west coast shells and the habits and habitat of mollusks of the beaches near Los Angeles."

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Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. Oct. 4, 1943.
" I am submitting a brief note on the size of my shell collection which may be of interest. My time is limited like yours so I don't get after the shells as often as I would like to. Besides that I am trying to build up a herbarium of well labeled plants. I have about 5000 specimens besides several thousand cryptos.

The Walter J. Eyerdam collection of shells contains over 12,000 species in about 25,000 lots. There are about 300 paratypes. A large part of the collection was made by Eyerdam in Alaska, Aleutian Islands, Kamtschatkana, Haiti, Solomon Islands, Papua, Central America, West Coast of South America, Patagonia, etc. There are about 1500 species from the west coast of North America and most of the land and freshwater species of the U.S.A. are fairly well represented . The most prominent genera in number of species and lots are Cerion, Ennea, Papuina, Polygyra, Placostylus, Helix, Urocoptis, Liguus, Goniobasis, Pleurocera and Melania. Very large collections of shells were made in 1929-1930 in the Solomon and Bismark Islands and Papua for the American Museum of Natural History, but only a part of the land shells have been classified and reported on."

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Proceedings of the Malacological Society of London, Vol. 25, part 4, 10 Sept. 1943, has been recently delivered

MITRA OF THE HAWAIIAN ISLANDS

By Charles A. Allen

There are more than two hundred species of Mitra in the tropics. Of that number more than fifty-five occur in the Hawaiian Island group.

This list includes localities. * In the writer's collection.

Mitra adamsoni Gray - The writer has never seen this collected. Mr. D. Thaanum has taken it on Hawaii. W.A. Bryan reported it from Oahu.

Mitra acuminata Swainson*- From the Kona Coast, Hawaii.

Mitra alba Pease*- well distributed in the islands.

Mitra ambigua fulva Swainson*- Quite frequently found on the beaches on Oahu, Kauai, and Maui.

Mitra assimilis Pease. Amer. Jour. Conch. (1867) 211. pl. 15, f.l. W.A. Bryan reported this shell as from Haena, Kauai. Tryon and Pilsbry consider this as juvenile M. coronata.

Mitra astricta Reeve *- Common on shore reefs at low tides, also frequently dredged in deep water.

Mitra auriculoides Reeve *- Found on Oahu, Molokai, Maui, and Kauai.

Mitra carnicolor Reeve *- Taken from Honolulu Harbor and Papohkku, Molokai by W.A. Bryan. The writer has never taken this shell.

Mitra consanguinea Reeve *- Collected by the writer at Kewalo Basin, Oahu.

Mitra coronata Lamarck *- Well distributed in the Islands. Frequently collected as a beach shell.

Mitra coronata aurora Dohrn. *- Collected by W.A. Bryan and compared with tray #28720 A.N.S.P. The specimen in the writer's collection is from Paumalu, Oahu.

Mitra crassa Swainson *- Common on the sandy beaches about Oahu.

Mitra baldwinii Melvill *- Not common. The writer has specimens from Honolulu Harbor, and Kona, Hawaii.

Mitra bathyraphe Sowerby *- The writer has specimens from Makumanu, Oahu and Papohaku.

Mitra brunnea Pease *- Amer. Jour. Conch. (1867) Vol. 111, p. 215, 233, pl.15 f.7. The writer has never collected this shell but has specimens from Waimea, Oahu collected by W.A. Bryan.

Mitra dermestina Lamarck -* Common as a beach shell and well distributed in the Islands.

Mitra dealbata A. Adams *- This shell, similar to M. astricta Reeve but thimer is not common. Sometimes collected in tide pools about Oahu.

Mitra episcopalis Linnaeus *- Not common. Sometimes taken on the outer reefs about Oahu and Kauai.

Mitra flammea Quoy *- The writer has a single specimen from Honolulu Harbor collected by W.A. Bryan.

Mitra ferruginae Lamarck *- Quite rare in Hawaii. The writer has several specimens collected at Waimea, Oahu.

Mitra fulvosulcatus Melville & Standon *- The writer has two fine white Termeculiform specimens, collected by W.A. Bryan from old Honolulu Harbor dredgings .

Mitra glandiformis Reeve- Reported by W.A. Bryan from Honolulu Harbor. The writer has never seen this shell from Hawaii.

Mitra ignobilis Reeve *- Occasionally collected as a beach shell.

Mitra lamarchii Deshayes *- Agrees with Reeve's figure and description. The writer has a single beach specimen, collected by W.A. Bryan at Haena, Kauai.

Mitra lienardi Sowerby * The writer has collected fragments only. This shell probably inhabits deep water.

Mitra texturata lifouana Crosse *- Not common. The writer has collected this shell at Koko Head, Oahu

Mitra lugubris Swainson *- Common along the shore and in old dredgings about Oahu.

Mitra lugubris honoluluensis Pilsbry *- Found with M. lugubris. Well distributed in the Islands.

Mitra litterata Lamarck *- Well distributed in the Islands. Is found along shore reefs where there is heavy surf.

Mitra micans Reeve *- Not common. The writer has two specimens from Honolulu Harbor.

Mitra nodosa Swainson *- Philos. Mag. p. 401. (1823). Quite common and well distributed in the Islands.

Mitra nebulosa Swainson *- W.A. Bryan collected this shell from Honolulu Harbor.

Mitra newcombii Reeve *- Amer. Jour. Conch. (1869), Vol. IV, p. 69. The writer has collected this shell on Sunset Beach, Oahu.

Mitra olivaeformis Swainson *- Common as a beach shell. Is well distributed.

Mitra pallida Pease *- P.Z.S. (1860) p. 146. The writer has never seen this shell from the Islands.

Mitra papalis Linnaeus - In the Forbes Collection from the Kona Coast, Hawaii. The writer has never collected this shell.

Mitra peasei Dohrn.* -* isabella Swainson. Not common. There are specimens from Honolulu Harbor in the writer's collection.

Mitra picea Pease *- Collected by W.A. Bryan in Honolulu Harbor dredgings.

Mitra pudica Pease *- Collected by W.A. Bryan at Moomumi, Molokai and Hoopuloa.

Mitra rohdia Reeve *- The writer has a single specimen from Honolulu Harbor.

Mitra rubra Swainson *- P.Z.S. 1835. Well distributed in the Islands.

Mitra rufocincta A. Adams *- The writer has specimens from Paumalu, Oahu.

Mitra scabriuscula Linnaeus gracilis Reeve *- Not common. Found in old Honolulu and Pearl Harbor dredgings.

Mitra scutulata Lamarck*- Reported by W.A. Bryan from Honolulu Harbor, Oahu.

Mitra sectilis Pease . Amer. Jour. Conch. (1867) Vol. 111, p. 271. The writer has never collected this shell.

Mitra sphaerulata Reeve *- Not common. The writer has a single specimen taken on Midway.

Mitra tabanula Lamarck *- Common on the beaches about the Islands.

Mitra tessellata Martyn *- Rare in Hawaii. The writer has a single beach specimen found at Waimea, Oahu.

Mitra ticonica Reeve *- Occasionally found in old dredgings.

Mitra ticonica vagans Pilsbry *- Common. Found at low tide and in tide pools.

Mitra tusa Reeve *- Conch. Icon. p. 283. P.Z.S. (1845). Collected at Paomalu, Oahu by W.A. Bryan.

Mitra turben Reeve. W.A. Bryan reports this shell from Honolulu Harbor, Oahu.

Mitra turgida Reeve- Reported as found in old Honolulu Harbor dredgings. The writer has never taken this shell in Hawaii.

Mitra ustulata Reeve *- Collected by W.A. Bryan from Honolulu Harbor, Oahu.

Mitra vexillum Reeve. Reported from Hawaii and Oahu by Mr. D. Thaanum.

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Dibaphus philippi Crosse *- Not common in the Islands. In the writer's collection from Honolulu Harbor, Oahu.

Turricula aureolata Swainson *- The writer has taken this shell from beach sand at Ala Moana Park, Oahu.

Turricula cumingii Reeve *-Collected by the writer on Sunset Beach, Oahu. It is not common.

Turricula bella Pease. P.Z.S. (1860) p. 145. W.A. Bryan reported this shell from Honolulu Harbor, Oahu.

Turricula exasperata Gmelin *- The writer has collected this shell on Waimea Beach, Oahu. Identified by Mr. D. Thaanum of Honolulu.

Turricula fortiplicata Pease. Amer. Journ. Conch. (1867) Vol. 111, p. 213. W.A. Bryan reported this shell from Honolulu Harbor, Oahu.

Turricula mucronata Swainson. The writer has never seen this shell from the Islands. W.A. Bryan reports it from Honolulu Harbor, Oahu, Haena, Kauai & Laysan.

Turricula nodulosa Pease *- Amer. Jour. Conch. (1867) Vol. 111, p. 214. Collected by W.A. Bryan on Oahu, Molokai, Hawaii and Laysan Id.
Turricula patriarchalis Lamarck*- Commonly called the " Old Man of the Sea". This interesting shell is common in the Islands.
Turricula putillus Pease. Collected by W.A. Bryan at Kailua, Hawaii.
Turricula pupula Dunker - The only specimen this writer knows of from the Islands is a single specimen from Laysan Id. verified by A.N.S.P. specimen from Goedffory Museum.
Turricula rubra exquisita Garrett. W.A. Bryan reported this shell from Laysan Island.

The writer has several unidentified specimens. There are probably several species not yet described.

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Rev. Paul D. Ford, Bahamas Conchological Society, Post Office Box 405, Nassau, Bahamas, certainly gave your editor an unusual thrill for these days. First a letter was delivered stating among other interesting thigs " Therefore with this letter I am again mailing you a box of shells". Shortly afterward the box arrived. It was a sizable box and almost caused an absentee at the shipyard. It contained beautiful specimens of Strombus samba Clench, Choneplax latus Guild. Tegula substriata Pilsbry etc. etc. An entire box of one hundred percent rare species. Such a box would be an event in any times not to mention these.

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Mr. John Oughton, Royal Ontario Museum of Zoology, Queen's Park at Bloor St., Toronto,Ontario,Canada. " I have received copies of your 'minutes' and have enjoyed them very much. I am very grateful for them."

And we are very definitely grateful to Mr. Oughton for the addition of some fifteen separates and papers on mollusks to our conchological library.

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Mr. G. Clifford Carl, Director, Provincial Museum, Victoria, B.C., Canada, sent an orchid to Dr. Gregg as follows : " I was particularly interested in Dr. Gregg's paper on Pacific Coast Slugs especially since it contained references to species found within this province. If Number 25 of your " Minutes" containing Dr. Gregg's previous article is still available I would much appreciate receiving a copy."

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Mr. and Mrs. E.P. Chace of San Pedro recently got away for a three day trip to the mountains. We expect to hear more from this trip at the next meeting. As far as shells are concerned Frank Buck had nothing on the Chaces when it comes to " Bringing em back alive."

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The October 1943 Bulletin of the Natural History Museum of San Diego is on hand and as usual contains a great deal of interesting news.
We were sorry to hear of the tragic death of Mr. John S. Higgins Jr. who was in charge of their crustacean department.
The death of Charles H. Sternberg, veteran paleontologist and author of several books was announced. He was 93.
Wallace Hamilton, one of their members is making a collection of shells at Trinidad, B.W.I.

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If you can find any good collecting spots without war emergency signs to climb over there are some rather good tides in the late afternoons of the last three or four days of November.

#28

MINUTES OF THE LONG BEACH SHELL CLUB* Oct.3, 1943

The October meeting of the Long Beach Shell Club met at the home of Miss Julia Ellen Rogers, our sponsor, 355 Junipero Ave., L.B. on sunday afternoon, the 3rd, at 2:30, with Mrs. Leona Lindermanas hostess.

Twenty three were present, our guest speaker, Mr. Dunker, president of the Agassiz Club, four who became members, two children, and the rest regular members. The new members were Abby H.C. Gorham, a sister of Miss Rogers, Lucille Tysseling, Clara A. Linney, of Long Beach, and Miss Edith R. Rex, librarian of Avalon, Catalina Island, a friend of Ruth Eaton's. Under the present circumstances Miss Rex's membership will be that of an associate until able to attend in person.

The meeting opened at the call of the Prs., Ralph Borman. As some had not received their minutes, the minutes were read to refresh our memories. The Sect. explained about the double post cards sent out with questionaire as to membership and a desire to have minutes continued.

On motion it was voted to send thanks to John Burch for our inclusion of minutes in with those of the Los Angeles Club, for his time and labors spent in the work of same, and to send in a dollar for the copy sent us for the files. Those who wished to help with the expenses of publishing same were asked to send in direct to John Burch.

The above mentioned new members made known their desire to become affiliated with us and paid their dues. At this several others also paid in, some dues due, others dues in advance, all told $2.50.

Mrs. Borman reported that Dr. Hill had changed the exhibit of the shell club at the Servicemen's Club, placing therein a display of island shells from the Lewis collection. It attracted considerable attention. The case for display purposes was kindly loaned by the Agassiz Club.

Miss Rogers reported that upon hearing that we wished a permanent place of meeting, had taken it upon herself to interview the city librarian, Mrs. Theodora Blewitt, and was offered the children's room for the purpose of Sundays from 2-5 o'clock. After some discussion, it was voted to accept the same for use beginning with the new year 1944.

Also voted, after discussion, to change the time of meeting from the first to the second sunday of the month, same hour, so as not to bring the two shell club meetings so close together. The Sect. was asked to write Dr. Lloyd of the Cabrillo Museum, of our decisionto meet at the library here in Long Beach, rather than at the museum in San Pedro, and again to thank him for his kind offer. Later we may plan a field trip there if it is permissible.

The matter of publicity was discussed. Our thanks were voiced for the kind mention made of our club activities by Mr. Case of the L.B. Sun , and Miss Settle of the L.B. Telegram, due to our good press agent, Leona Linderman.

The speaker of the afternoon was introduced by Miss Rogers, who gave an interesting outline of the geological formations of Long Beach and principally that if Signal Hill, which she said she had prepared for the Mineral Club, in her introduction of Dr. Dunkle, the Pres. of the Agassiz Club, who spoke to us on the subject of " Buried Shells".

He spoke briefly on the whys and wherefores of the various stratas and layers and approximately the ages of them. He had a very interesting list of shells that had been found in excavations and drillings on the hill, 160 species having been found in one bed, which included 9 different Turbonillas, 7 Nassas, 5 Crepidula, etc. Most of them comparable with live shells now found here and of the same names. This list was available and Dr. Dunkle offered to have it multigraph for those who so desired, and it was suggested that we pay for the materials and labor. Dr. Dunkle's talk was very interesting and enjoyed by all.

Our hostess served us with coffee and cake as we adjourned.

Our next place of meeting , Nov.7, was announded as at the Shell House, 1611 S. Elena, Redondo Beach with Mrs. Rose Burch as hostess. Mr. and Mrs. Borman were appointed in charge of transportation, those having spare seats and those in need of them to phone the Bormans. E.P. Baker-Secretary

No. 29, p 1

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

November 1943

The minutes and other publications of the Conchological Club of Southern Caliornia are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held November 28, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

Minutes of the October Meeting- 1943

The Conchological Club of Southern California met in the Director's Room of the Los Angeles County Museum at 2:30 P.M. , Sunday , Oct. 24, 1943.

There were 18 members present including one who had long been absent from the meetings, Frank R. Ford, 1118 Wellington Ave., Pasadena 2, Calif.

No reports from standing committees were forthcoming. Mr. Ford, whose work as a civil engineer had taken him to far places including some of the distant Pacific Islands, was asked to tell us of some of his experiences. One of the most interesting to conchologists was Midway Island, where he was stationed for some time in the preparation of landing fields for air travel. This far away island he described as an almost flat island of white coral sand surrounded by the usual coral reef enclosing quiet waters, teeming with mollusks, fish and sea plants. The island is treeless except for a single introduced species which has with difficulty because of the sterile soil, been induced to grow there. Some of the island is a U.S. Bird Refuge, and birds in unbelievable numbers and of many kinds live there without fear of harm from man. Their numbers are only diminished by being attracted to their harm by the light made necessary in the construction work. After the war, the work of making the island a resort for globe flying will probably be taken up again. Now all is for war purposes. Despite the usually perfect climatic conditions hurricanes some times occur, and Mr. Ford's description of one he experienced would convince a listener that a Pacific hurricane is one of the finest things to be absent from.

Following his talk, Mrs. Clark gave a paper on fossil collecting at a comparatively new location in the Palos Verdes Hills near Walteria.

The meeting was then adjourned.

Effie M. Clark, Secretary.

H.W. Harry, Ph M 2/c, U.S.S. Algol, U.S. Navy Receiving Barracks, Portland, Oregon
" Here am I in Portland. They sell 2 sp. of Ostrea in the market and also Paphia . As to land collecting I have a Haplotrema and 2 sp. of slugs. Does Monadenia occur this far inland ? Had a card from Glenn Webb. Still in England, same address. Does quite a lot of collecting, says he has found only one H. aspersa (they must all be in California) but lots of other Helix, Helicina etc. Do write him. I expect to be here about 2 months. May go home on leave."

Herman W. Miller, Apartado # 1320, San Jose, Costa Rica. We have all thoroughly enjoyed having Professor Miller with us and will miss him. Howeber, we are happy that he could return to his work in the beautfful country he told us so much about. We expect to hear from him as a conchologist down there.

Dr. W.O. Gregg, 2200 S. Harvard Blvd., Los Angeles 7, Calif. " On September 24th I accompanied Dr. and Mrs. Gordon Ball on a trip to Big Bear Lake in search of fresh-water mollusca. Dr. Ball is associate professor of zoology at U.C.L.A. The particular mollusks we were after were planorbids and we found a goodly number of both Helisoma and Gyraulus which were forwarded alive to the National Instit of Health, U.S. Public Health Service, for research work on the parasite Schistsoma mansoni. The purpose of the research is to determine just which species of North American Planorbidae may serve as intermediate host of the above mentioned parasite. Other mollusks which we found were Valvata humeralis californica Pils., Stagnicola palustris nuttallii (Lea), Physa osculans Haldeman, and Radix auricul aria (Linne).

R. auricularia, a palearctic species, introduced into North America, has rapidly become naturalized and is becoming widely distributed in natural as well as artificial bodies of water. In Big Bear Lake it is the predominating mollusk."

A. Sorensen, 247 Granite St., Pacific Grove, Calif. " I am sorry to have to announce the death of Mrs. Nettie Fackenthall of Pacific Grove. She was 75 years of age and had lived in the same house for more than fifty years. She was one of the pioneer conchologists of California, and she leaves a fine collection of west coast shells as well as a large and unusually complete exhibit of Indian Arrow Heads and other Indian relics."

" The American Consul at Guaymas, Mexico, writes me that conditions there are about the same as when I was there last, but that prices are 50% higher."

W.J. Bower,340 3rd St. So., St. Petersburg, Florida. Oct. 16, 1943 " Dear John; We have had lovely weather since I arrived on the first. Been shelling only once- no bars exposed in Tampa Bay so did not find much. Only one species new to me- Pyramidella fusca- got a lot of very tiny Melongena corona."

D.S. and E.W. Gifford, 2535 Le Conte Ave., Berkeley 4, Calif. We are deeply grateful to the Giffords both for the beautiful set of Topotypes of Olivella pycna from Bolinas Bay, Calif. as well as the cash contribution to our expense fund.

We sincerely regret that our duties at the shipyards prevented the acceptance of the following invitation: " You are cordially invited to visit the annual showing of Invertebrate Paleontological specimens to be on exhibit at Cactus Mansion, 6719 11th Ave., Los Angeles (43), on Saturday and Sunday, Nov. 6,7,8 10 A.M. daily. This show was made possible through the combined efforts of Mr. E.E. Hadley, of the Los Angeles County Museum (Invertebrate Paleontology Dept.), and James C. Marsh, showing Paleozoic Fossils, some 195 to 550,000,000 years old. Everyone interested in Geology is welcome on either of the two days the exhibits will be on view."

We have just read with interest the Bulletin for November of the Natural History Museum of San Diego. Among other entensely interesting new aquisitions of the museum (including a beetle from Guadacanal with feelers alone 5 inches 1 long) is the following note of interest to conchologists. " From another region which has lately been prominent in the war news came a choice little collection of shells donated by Mrs. Burdette G. Foster of San Diego. They were gathered in 1938 on Procida Island, which stands near the entrance to Naples harbor and which was captured by the Allied forces at the time of the landing operations at Salerno."

Mary Mouat, P.O. Glenfield, Auckland, New Zealand. " ... We have no club while the war is on but we hope to begin again as soon as it is over. Some of our members are gathering shells for American men in hospitals. Dr. Moore, one of your medical men, recommends shells for shell shock patients to handle. They take their minds off war. Mrs. Fairfield goes out regularly. I understand our local museum has given all their spares to the same good cause. I have interested many of our own boys in our returned soldier's hospital."

J.R. Le B. Tomlin, 23 Boscobel Rd., St. Leonard's-on-Sea, England " I congratulate your club on its flourishing condition and wish I could attend some of the meetings."

Turritella Terrace

by Mrs. Effie M. Clark

Nowadays we do our collecting where the powers-that-be tell us we may do s and that is just as true, or a little bit truer, of the " sand sifter" as it is of the " beach comber".

Sometimes I fairly drool at the mouth when I see, in the Harbor vicinity, evidence that great, interesting holes are being dug deeply into the hills, while between me and the satisfaction of finding out what goes on there stretches a most secure-looking fence bearing the heartless legend " Military Zone-Keep Out".

I once tried my powers of persuasion on a nice looking military man who was sitting idly in a car beside an open gate, just beyond which was a most interesting exposure of fossil bearing strata where a pipe line had recently been installed. The net result was that the exposure is still there, (I presume), and I still remain " outside the gate".

About two weeks ago, because one just has to dig somewhere, if digging is in their blood, Miss Cook and I decided to make a trip to a slit in the bluff near Walteria. The place has no name that I know of, and I am hereby proposing one, " Turritella Terrace", The fitness of the title any one who visits the formation will appreciate. I first heard of it some years ago when Dr. Wright came to a picnic at the Burche's with his hands full and pockets full of Turritellas, Fusinus etc. He showed them to me and I told him it looked as though he had been to Timm's Point. He said " No", and described the location. It so happened, some time later, that the Edmonds Family and I had a Labor Day to celebrate and we decided to look the new location over. The day was blazing hot, and we found the crevice in the bluff cool, though somewhat cramped, with shells tightly wedged in the wall, in the manner of Timm's Point. Mr. Edmonds, with his trusty pick made the crevice passable, then enlarged a place so we could get at the wall to work- in a cramped sort of way. Mr. E., being of an aspiring nature, dug his way to the top of the terrace, but Mrs. E. and I, preferring the coolness of the lower regions, remained to pick what we could from the close in walls. The low down position of the exposure made it a hard job. The abundance and beauty of the Turritellas was only exceeded by the difficulty of removing them unbroken from the clinging clay that held them. Nevertheless, we spend a pleasant afternoon and brought a reasonable amount of dirt, to be washed out in the manner of Timm's Point formation material with which we had by then become quite familiar.

This formation is equally as deep as that of Timm's Point, extending , Mr. Edmonds says, quite to the top of the bluff. I am quite willing to take his word for it, for he is a truthful man, the crevice is narrow , and I am not.

A young lady, who used to be employed at the Monticello School, afterward took a job as governess in a family containing four very lively youngsters and who lived at the top of the Palos Verdes Hills. Her job was to let the children be out of doors as muchas possible and to keep up with thema s wellas she could, and it proved to be some job. They often went horseback riding together, and generally at a lively clip. In telling of her experiences she said that, when riding , she often thought of me and wished I could be with them, as they galloped over quite extensive beds of shell outcrop. You may immagine I was ready with questions as to the whereabouts of such treasure; but she regretfully said she could only say there were several of them, they were high up on the hills, but that the children were all the landmarcks she had time to be concerned with. Soon afterward she went to New York, was married, and I do not now know either her name or address. So perished a clew that lead to nowhere, but I am wondering , if one of the beds she saw could be part of the formation that washed down to make up the face of the bluff at Timm's Point or Turritella Terrace. They must have come from formations close together in age.

On the trip Miss Cook and I recently made, the digging was hard and I was just trying to shake off a cold and was feeling none too brisk, so a good bit of the time, I sat in the sun, just at the mouth of the cavern and sifted the sand that had washed out of it while Miss Cook did strong arm work within. Most of what I got from the sand matched what I washed out after I got home with few exceptions.

Low down in the formation and washed out beside the opening, were rocks with many Pholad holes that looked empty and proved too hard to negotiate with my small hammer, yet too heavy to carry home. They exactly resembled those at Timm's Point that lie at the base of the bluff.

Miss Cook, being of sterner stuff than I, on that occasion at least, managed to get out a nice specimen of Pholadidea ovoidea Gould and, I think, one or two other nestlers. Neither of us saw anything resembling them in the clay above. Later, in talking over our experience with Mr. Edmonds, we decided that we had really missed the boat and taken a tramp steamer instead; for he told us that a block or so to the left, is a much more accessible exposure that contains a greater percentage of the same kind of shells. If the winter rains hold off for a spell, we will have to see about that.

Alex Clark, in his list of Timm's Point shells, published in 1931, reported a fauna of 155 species; to his list, Mr. Willett in 1937 and 1939 added 21 more making a total of 176. Later Tom Burch listed his finds in that location at 243 which included all those of the two above lists that he himself did not have. My list for the Walteria location is, to the present time a meager one of 83 to which Miss Cook adds 16 and Mr. Edmonds 4, making 104 in all. I think Don Smith has one or two to add to this number but was unable to get in touch with him to verify it.

The difficulty of getting at the material makes it almost impossible to get a number of species that at all compares with that of Timm's Point, but what we have secured, so far, is almost identical. Only three in number: Paludestrina protea Gould, Crepidula aculeata Gmelin, and Calliostoma gloriosum Dall have been found to date. The most interesting and characteristic species to be found so far, is what we have been calling Turritella jewetti Carpenter , but that Chas. W. Merriam in his monograph, " Turritellas from the Pacific Coast Region of North America" says should bear the name Turritella pedroensis Applin. Merriam pp. 121-124

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Pvt. A.J. Bauman, 6136 Lexington Ave., Los Angeles, Calif. " This is a thank you for sending the minutes to my home regularly. I just returned from there on furlough unfortunately not having a chance to visit the Shell House and I reread all the old papers. I'm in the Army Signal Corps as a pole lineman or wire layer and am waiting shipment now after completing my training here in Sacramento. Dont write here if you plan to."

Major H.S. Mort, 13 Milner St., Mosman, N.S.W., Australia- Many of us have fine Australian specimens in our collections bearing his labels and his friends will regret to learn of his illness. " Many thanks for the two lots of Minutes of the Conchological Club of Southern California; they interested me very much and I think it an excellent idea to circulate the minutes as a method of keeping up the interest of the members in the doings of the club. It was especially of interest to me, as I am afraid my activities on the beach have come to an end. I have been in hospital since the beginning of January being unable to walk (or even stand) owing to arthritis. I am not yet quite helpless, but even if I do get on my feet again I don't think my activities will run to even beach collecting in the future , so anything in the way of conchological literature is very welcome. Owing to the war, many beaches which used to be good collecting grounds are now inaccessible."

Mrs. James McK. Cannon, Route 1, Fort Pierce, Florida.- We were pleased to have her nice letter and contribution for stamps and not surprised to hear the usual complaint " And for the past two years war restrictions have made any kind of collecting almost impossible."

W.J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash.
" A few days ago our troops started to invade Choiseul and Bouganville Islands. It looks now as though we will have the Japs completely out of the Solomons within a few weeks or at most by Christmas.

My first week in the Solomons in 1929 was spent in shell collecting around Kieta on Bouganville which is the largest of the Solomon group. I found about 40 species. There are five small creeks within a distance of a quarter of a mile on Kieta Bay. Each of these water courses had four or five species of freshwater shells, mostly Neritina and Melania. Each creek had species not found in any of the other creeks. There were about twenty species altogether.

At Kieta I discovered a single specimen of a new sp. of Papuina eyerdami named by Dr. Ilsa von Rensch of Berlin Zoological Museum. I also found a single specimen of Placostylus founaki Hombron & Jaeg. This is the only record of a Placostylus from Bouganville and establishes its most northerly range for the genus.

On Choiseul Island the Whitney Expedition spent over three months exploring and collecting birds with the special object of trying to find the remarkable ground pigeon called the Microgoura meekii Rothschild. It is a miniature edition of the big Victoria crowned pigeon of New Guinea and only four skins were ever collected. We scoured the whole island and offered big rewards to native chiefs and tribesmen for this bird but never found one of them. We found evidence of the camp that Meek had established twenty years before and the old chief that had helped him collect some of the birds. We were told that " Plenty pussy cat blong mission he ketchum die finish altogether along pigeon blong ground." We also finally reached that conclusion.

In Choiseul Bay, at Bambatam and Luti I made fine collections of marine shells and thousands of Papuina of many species were taken in the woods and jungles. Through these collections the American Museum of Natural History has an exceedingly fine representation of the shells of Choiseul Island as well as large series of all the species of birds of Choiseul.

The Whitney Expedition spent more than four years in the Solomons collecting birds, so practically every island was explored.

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Mr. Charles Allen has given us several more or less extemporaneous talks on collecting in Hawaii. The following random notes from his talks are interesting. One statement which seemed to be new to most of those present was that the islands are a set of shelves or platforms. The shore line is the first of these.
A low tide leaves from one to five feet of water on the 2nd platform and one or two fathoms on the third, Most collecting is done at night with a gasolene lantern. The commonest Conus in shore collecting there are C. lividus,flavidus,pulioarius and rather less common C. sumatrtrensis which accumulates seaweed and other debris on its shell. It has a fairly wide distribution as it is taken all the way from shore to the 3rd platform. Next comes C. omaria and very occasionally C. textilis. C. striatus is found in small colonies in the sandm while C. cattus is among seaweed in rough surf. The latter is not rare at night but seldom found by daylight when it is down deep in crevices of the roackand coral. Conus lithoglyphus is taken occasionally on the reef but usually has to be dredged. Conus vermiculatus and C. miliaris are usually found at night, but occasionally under coral heads in the day. C. imperialis is very seasonal in its habits, living fairly close in to shore during the summer and dissapearing for the winter. Conus distans lives in the deeper water. Young shells are very beautiful but the color pattern dissapears as it matures. Perhaps the high light of Mr. Allen's display of Conus is the very rare Conus oblitus Reeve.

Cypraea caput-serpentis L. is the only Cypraea which can fairly be called common in the Hawaiian Islands now. C. isabella,helvola, var. hawaiiensis, and semiplota being next less rare. Cypraea moneta is much less common than some years ago as most of their breeding grounds have been dredged out. *Cypraea arenosa* and *scurra* also seem to be dying out, but the dredging does not seem to be responsible as their decline runs farther back. The large C. *reticulata* come from deeper water, the smaller specimens from on shore. According to Dr. Ostergaard C. *reticulata* always has a brown spot on the base, the very similar C. *arabica* never. Cypraea *sulcidentata* seems to feed only on an orange colored coral or orange animal which lives in certain corals. And some of the species of Cypraea are collected only by bringing up small coral heads and breaking them up in the boat. When first taken C. *semiplota* is coal black.

Cassis cornutus occasionally reaches the length of 30 inches, ranking it as one of the largest of the univalves. There is only one species of *Oliva* in the Islands.

Night collecting is more successful than daylight not only because the shells have come out of the crevices in the coral, but because the mantles of some of the mollusks are sensitive to light so when the glare from the lantern strikes them, the mantle which sometimes resembles the seaweed very closely is drawn back into the shell and the shell is much easier to see.

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A.W. Fahrenbruck, Fourthand Sycamore Sts., Cincinnati, Ohio. See if some of our friend's collecting experiences don't stop you for a minute. " In 1923 I made the acquaintance of Mr. Chas. B. Lungren, now deceased. He spent most of his life at Ozona, Florida near Tarpon Springs, a nd I spent some time with him each year for several years. He had a splendid power schooner and we made collecting trips to get stock for his wholesale shell business. One time he had an order from Hetterick of San Francisco for 2000 crown shells (Melongena corona) and we gathered them all and a lot more in one afternoon. We baited them with horshoe crabs following the channel at low tide for about half a mile and worked around in a circle using several dozen crabs. On reaching our starting point there were crowns converging on the bait from every direction and dozens piled up on top of the crabs. Each bait was a repetition of the others. We filled a large skiff and I helped clean them and picked out the best ones for my own collection. There were a few with double and triple rows of spikes, some spikes turned upward toward spireand others standing out straight angle from the shell, others with spikes curled and others with extra long spikes, one pure white and others of all kinds of colored stripes and shades. The set is now in our local museum of natural history and I think it is the finest in the world. I have seen all the big collections in the east.

On another interesting trip to a sand bar opposite Clearwater I saw a 17" *Fasciolaria gigantea* on the sand at extreme low tide and could not at first lift it up. After a few strong pulls it came loose with a 5 Lb. *Venus mercenaria* hanging to its radula.

It is interesting to watch *Cardium magnum* push itself up out of the sand. When the tide runs off you see nothing but a lot of smooth sand at first, but as the sun begins to warm up the sand, you will see little squirts of water and sand forming a small pile of sand and directly old Cardium climbs out on top and stands on edge with his hinges toward the sun and his body in the shadow of his shell. There will be hundreds on the space of an ordinary city lot. A little after the Cardiums emerge others will start pushing up the sand notably *Strombus pugilis*, *alatus* and a few other large species. The Fulgurs are usually in the sea grass where wading is necessary but some may be found on the sand flats. They usually are in a little deeper water to which even the spring tides do not uncover them.

I may go south to live in the next few weeks, and expect to do more exploring for shells perhaps with a dredge. An expedition from a large museum in the east spent 10 days collecting in Tampa Bay and reported 314 species found, most of them with a dredge."

Dr. Paul Bartsch, Curator, Divisions of Mollusks and Cenozoic Invertebrates, Smithsonian Institution, United States National Museum, Washington, D.C. 25. " Won't you publish this note in your minutes ? I have been working for some little while on the West American Turrids and I find the radula absolutely essential in helping formulate a new classification, and this has brought me to the realization of how important it is not to extract the animals out of small shells, but let them dry up with the operculum in place within the shell. Fortunately this condition has obtained in a lot of the material that we have here and it is surprising with what ease one can soak up one of these ancient mummies and extract the animal and study its general shape, operculum, and radula.

Therefore to all of our West Coast mollusca students, let me urge you not to be over-fastidious about cleaning your shells. A little smell now and then will, after all, recall the pleasures you had in securing your material and the story that it will tell will be of such inestimable value that the slight discombobulation of the peculiar fragrance that occasionally may ensure for a little while , will be compensated for a thousandfold when you really come to study the material.

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Leslie Hubricht, 300 E. Plume St., Norfolk, 10, Virginia " Thanks for the copy of the Minutes of the Conchological Club of Southern California. I have enjoyed reading it very much. The article on the west coast slugs was of special interest. I have been collecting the slugs of eastern U.S. for a number of years and have concluded that the slug Philomycus carolinianus (Bosc.) is in reality two species. I would like to receive further copies of your publication and am enclosing some stamps to cover postage.

I have been trying my hand rather unsuccessfully at marine collecting. Either I don't know how to collect them or there are not many here. I have collected less than a dozen species of snails."

Dr. W.O. Gregg, 2200 S. Harvard Blvd/, Los Angeles 7, Calif. " Just got a letter from Harold W. Harry, Ph M 2/c. His address now is U.S.S. Algol (AKA* 54) Receiving Barracks, Portland, Oregon. In his letter he says " He (Dr. Berry) gave me a reference which I am trying to get (My librarian at the Corona Hospital wrote for it-- $3.50). It is " British Snails, a Guide to Non-Marine Gastropoda of Great Britainand Ireland, Pliocene and Recent" by Arthur Erskine Ellis, Oxford, at the Clarendon Press, 1926."

Would you know what address to write to from the above ? Also do you think it would be worth taking a chance on ordering one now if one were sufficiently anxious to gamble on receiving a copy ? "

Anyone knowing the answer to Dr. Gregg's questions may write him direct ot write us about any available books or papers on conchology.

Mr. R.M. Barnes, Lacon, Illinois- We are sincerely grateful to Mr. Barnes for his generous contribution of $5 toward the expenses of these papers.

Fred Tobleman, 13½ Brenner St., Newark, New Jersey- Mr. Tobleman has some very interesting items on his exchange list especially from Japana nd the east. He would no doubt be pleased to receive exchange lists from others.

Mr. M.K. Jacobson, 455 Beach 139 St., Rockaway, New York. Mr. Jacobson's list of duplicates for exchange lists a number of quite rare species. Exchangers should write him for his list.

The Nautilus, Vol. 57, October, 1943, No.2, has just been received. It is an excellent and interesting issue containing several articles by members of our club. However, there is comparatively little concerning the fauna of this coast. Dr. William Marcus Ingram has an article on the habits of Helminthoglypta nickliniana (Lea), Brian Curtis, an article on " Muscle Poisoning on the Pacific Coast", Dr. Joshua L. Baily Jr. a note on some interesting labels, and Walter J. Eyerdam has an interesting paper on some of his collecting in the Solomons.

No. 29

LONG BEACH SHELL CLUB Nov. 7, 1943

The club met at the home of John and Rose Burch, 1611 S. Elena Ave., Redondo Beach, Calif. Sunday Nov. 7th. The meeting was called to order by the president, Mr. Ralph Borman at 3 P.M. There were 33 members and guests present. Mr. E.P. Baker being unable to attend due to his duties at the aircraft plant, Mrs. E.P. Chace was appointed acting secretary.

There were no committee reports on nomenclature or membership. The matter of the club's regular Christmas party was brought up. The party will be held at the Lehman home, (Mr. and Mrs. C.A. Lehman, 248 Ximeno Ave., Long Beach, Calif.) on Dec. 5th, 2:30 P.M. with Mrs. Lehman and Mrs. Linderman in charge. The usual Christmas packages will be exchanged. Members will please let Mrs. Lehman know whether they can be present- telephone Long Beach 81563 evenings.

Miss Julia Ellen Rogers asked the cooperation of the club members regarding a possible supplement or revision of The Shell Book. Miss Rogers asked the members to bring in notices of necessary revisions in nomenclature etc.

The president appointed Mrs. Linderman, Lehman, and Miss Higgins as nominating committee, to report at the next meeting.

Mr. Charles Allen brought in a fine tray of Mitras from Hawaii which attracted a great deal of interest. He was accompanied by Mr. Glass, Warrant Machinist of the U.S. Navy and just returned from the South Seas.

Mr. and Mrs. David Hanson, 2133 Wichita Ct., San Pedro, Calif. (formerly of Spokane, Wash.) were elected to membership in the club.

Mr. Charles Allen gave a brief talk on his Hawaiian Mitras. He said that most of their larger species are taken in sand in less than 10 Ft. of water, or small species in from 5 to 150 Ft. of water in coral.

When the meeting was turned over to Dr. H.R. Hill, program chairman, he presented John Burch, who began by displaying a single specimen of a *Glycimeris profunda* Dall. This has been overlooked for years and only recently brought to light. It strongly resembles *Glycimeris corteziana* Dall but is much more inflated. Other rarities displayed were deep water local Mitras, topotypes of the recently described *Fissurella barbouri* and two extremely rare Strombus from the Caribbaean, *S. gallus* L. and *S. samba* Clench.

The club was thenadjourned to give time for a hasty glimpse of the Burch collection. Respectfully submittes, Elsie M. Chace, Sec.-Pro. Tem.

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It will be appreciated if all those receiving our Minutes and not at this time being addressed including the Postal Zone number will advise us of the No. if they have one.

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Some of us were recently interested in some of the Records of the Indian Museum. We have a letter from the Zoological Survey of India, Kaiser Castle, Benares, Cantt, India advising us that all of the volumes of the Records may be purchased at this time but that no separates of papers on conchology can be supplied.

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We wish to acknowledge with thanks the generous donations of the following to the costs of mimeographing these minutes ; W.K. Emerson, San Diego; F.S. Webber, Holyoke, Mass.; Frank Lyman, Lantana, Fla.; Mrs. Gladys Zook, San Bernardino, Cal.; Grace Stillwell, Long Beach; W.K. Weeks, Brooklyn, N.Y.; W.P. Cook, San Diego; Evelyn Davis, Long Beach, Calif.; Ralph Borman, Long Beach; Mrs. H.E. Marsden, Los Angeles; Mr. C.W. Melville, ~~H~~ Chestnut Hill, Mass.; Mr. James M. Stephenson, Long Beach; Mr. A. Haven Smith, Orange, Calif.; A. Sorensen, Pacific Grove, Calif.; D.S. and E.W. Gifford, Berkeley, Calif.; Mrs. James McK. Cannon, Fort Pierce, Fla.; W. Eyerdam, Seattle, Wash.; Pvt. A. Bauman, Los Angeles; Miss Lena Higgins, Long Beach.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
December 1943

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held December 26, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

At the November meeting Mr. A.M. Strong gave us a very interesting talk on the family Columbellidae on the West Coast. The talk was illustrated by many fine mounted sets of specimens including many species never seen before by any of the members present. The fact that new species as well as tentative conclusions were involved prevents the publication of Mr. Strong's lecture in full. However, the outline of the discussion may be of interest and will follow.

Family Columbellidae

Genus Columbella Lamarck 1799. Type C. mercatoria Lam. North Atlantic. Spiral sculpture over entire surface.
Genus Pyrene Bolten, 1798. Type Voluta discors Gmelin. Philippines. Similar to P. fuscata Sowerby without spiral sculpture.

Genus Mitrella Risso, 1826. Type Mitrella flaminea Risso.
Subgenus Alia H. & A. Adams, 1853. Type C. carinata Hinds . California. This grades over into noncarinated forms very similar to the type of Mitrella.
Subgenus Astyris H. & A. Adams, 1853. Type C. rosacea Gould. North Atlantic. Little to separate this generically from M. flaminea.

The West Coast species form a fairly compact group separated mainly by differences in the height of the spire and in the color pattern. There would seem to be little reason for subgenera.
Genus Nitidella Swainson, 1840. Type Nitida. West Indies. The type has plications on the columella. Carpenter expanded the genus on characters of the operculum and described Nitidella gouldi from Santa Barbara. Dall followed Carpenter and described several more, stating that the plications were obsolete. There seems to be no reason for not including these in Mitrella.

29 West Coast species are listed.

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Genus Parametaria Dall, 1916. Type Conus dupontii Kiener. Meta Reeve,1859, not Koch, 1835. Gulf of California.

3 West Coast species listed.

Genus Microcitharia Fischer, 1884. Type, Columbella harpiformis Sowerby. Panama .

2 West Coast species.

Genus Bifurcium Fischer, 1884. Type Bifurcium bifurcium Fischer (Columbella bicanalifera Sowerby.

Only West Coast species.

Genus Anachis H. & A. Adams, 1853. Type Columbella scalarina Sowerby (or ru Sowerby). Some question as to what scalarina is and if it is the same as costellata B. & S. Both range from the Gulf of California south. Larger sized shell

Subgenus Anachis ss. 22 species listed from the West Coast.

Subgenus Chauvetia Monterosato, 1884. Type Buccinum candidissimum Philippi. Smaller than Anachis ss and usually higher spired. Tryon uses Seminella for these shells.

26 species from the West Coast.

Subgenus Glyptanachis Pilsbry & Lowe, 1932. Type Anachis (Glyptanchis) hilli Pilsbry & Lowe, Nicaragua. Sculpture with prominent cords over the ribs. Only species listed.

Genus Nassarina Dall, 1889. Type Nassarina buschii Dall. West Indies. Dall described only one species from the West Coast, N. solida Dall from La Paz. He placed the genus in the family Alectrionidae.

Subgenus Zanassarina Pilsbry & Lowe, 1932. Type Nassarina poecila Pilsbry and Lowe, 1932. Nicaragua.

4 West Coast species described by Pilsbry and Lowe.

Genus Amphissa H. & A. Adams, 1853. Type Amphissa columbiana Dall(Buccinum corrugatum Reeve, not Brocchi) California and north.

6 West Coast species listed.

Genus Cosmioconcha Dall, 1913. Type Buccinum modestum Powys. Central America.

5 West Coast species listed.

Genus Mazatlania Dall, 1900. Type Terebra aciculata Lamarck. West Indies. Dall described this as a subgenus of Spineoterebra in Terebridae. The soft parts show it to belong in Columbellidae. M. hesperia Pilsbry & Lowe is M. aciculata in West Coast lists.

Genus Aesopus Gould, 1860. Type Aesopus japonicus Gould. Japan.

8 species listed from the West Coast.

Genus Strombina Morch, 1852. Type Strombina lanceolata Sowerby. Panama. No subgenera listed.

A West Coast genus- 22 species listed.

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J.M. Dowdle, S 2/c, 117 C.B. Co. C, Plt. 5, N.A.B.D., Gulfport, Mississippi. We were glad to have a fine letter from Jack and his friends may be glad to have the above address. However, the Seabees do not seem to stay put very long at a time, and the mail will as like as not be forwarded somewhere. Wherever that may be though we simply wish Jack well and hope that for his happiness it will take him to some good shell collecting territory.

Maxwell Smith- has sent us a card " Notice of Removal- From Lantana, Florida to Box 65, Winter Park, Florida."

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We are in receipt of a very interesting article on Nomenclature, by T.D.A. Cockerell. This was published in The Pan-Pacific Entomologist, Vol. XIX, No. 4, pp 158-160, October, 1943. It is regretable that such papers will not have a larger circulation.

We also have a copy of " Letters from Douglas Cockerell, Letchworth, Eng. to his borther, T.D.A. Cockerell, in California". These beautifully written letters really give something new to think about.

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TEREBRA IN THE HAWAIIAN ISLANDS

by Charles A. Allen

Of more than 40 species of Terebra found in Hawaiian waters only three or four are occasionally found living on the reef or close to shore. These live in one fathom and are also dredged in several fathoms. None are considered common. Among those found close to shore are *T. maculata* which reaches a length of 10 inches; *T. crenulata*, 6 inches, and *T. gouldii* 3 inches. In quiet bays with a sandy bottom they are found by following their trail which is a ' plowed furrow", then digging at the terminus of their trail. The ' chace is quite exciting.

The following list includes localities. Species are limited to definite localities thus indicating rarity.

Terebra aciculina Reeve. Moomumi,Molokai, Maalaea Bay, Maui,Kona Coast,Hawaii, Kahana, Oahu, and Ocean Id.

Terebra albida Gray. Dredged in 10 fathoms off Waikiki, Oahu.

Terebra argus Hinds. Haena,Kauai.

Terebra assimilis Pease. Amer. Jour. Conch. (1869) v. p. 67. Honolulu Harbor, Oahu.

Terebra bipartata Deshayes. Kona coast, Hawaii.

Terebra babylonia Lamarck. Waimea, Oahu, Honolulu Harbor, Oahu.

Terebra cancellata Quoy. Honolulu Harbor, Oahu, Kona, Hawaii, Midway Id., Haena, Kauai.

Terebra cerethina Lamarck. Midway Id.

Terebra cinera Born. Wainiha, Kauai, Kaneohe Baym Oahu, Ocean Id..

Terebra cingulifera Lamarck. Honolulu Harbor, Haena, Kauai.

Terebra cingulifera laevigata Gray. Honolulu Harbor,Oahu, Midway Id., Haena,Kauai.

Terebra chlorata Lamarck. Honolulu Harbor, Oahu., Midway Id., Mokapu Pt.,Oahu.

Terebra coerulescens Lamarck. Honolulu Harbor, Oahu.

Terebra oostellifera Pease. Amer. Jour. Conch. (1869) v.p.66. Kainalu,Molokai.

Terebra crenulata Linne. Midway Id., Honolulu Harbor, Oahu, Kahana,Oahu, Ocean Id., Haena, Kauai, Niihau Id.

Terebra crenulata fimbriata Deshayes. Honolulu Harbor, Oahu. Kailua,Oahu. Kahuku, Oahu. Wainiha,Kauai. Haena,Kauai. Popohaku,Molokai. North Shore, Lanai.

Terebra decorata Lamarck. Honolulu Harbor, Oahu.

Terebra dimidiata Linne. Honolulu Harbor, Oahu.

Terebra funiculata Hinds. Honolulu Harbor, Oahu. Haena, Kauai.

Terebra gouldii Deshayes. Kahana, Oahu. Honolulu Harbor, Oahu. Midway Id. Haena, Kauai. Kona Coast, Hawaii. North Shore, Lanai.

Terebra inconstans Hinds -- *aciculina* Reeve

Terebra lanceolata Linne. Midway Id. Niihau Id. Honolulu Harbor, Oahu.

Terebra lauta Pease. Amer. Jour. Conch. (1869) v. p. 66. Mokapu Pt.,Oahu. The writer has several specimens dredged by Ted Dranga in about 8 ftms. off Waikiki, Oahu.

Terebra maculata Linne. Honolulu Harbor, Oahu. Haena,Kauai. Ocean Id. Midway Id . Pearl and Hermes Reef. Hoopuloa,Hawaii. Kaneohe Bay,Oahu. Moomumi,Molokai.

Terebra muscaria Lamarck. Moomumi,Molokai. Honolulu Harbor, Oahu. Barbers Pt., Oahu.

Terebra nitida Hinds.Honolulu Harbor, Oahu. Mokapu Pt.,Oahu. Wainiha, Kauai. Haena,Kauai. Kalalau Kauai.

Terebra nodularis Deshayes. Waimea, Oahu.

Terebra oculata Lamarck. Honolulu Harbor, Oahu. Midway Id., Barber's Pt.,Oahu.

Terebra pertusa Born. Honolulu Harbor, Oahu.

Terebra punticulata Deshayes. Haena. Kauai.

Terebra plicatella Deshayes. Waimea, Oahu -- (*nitida* Hinds)

Terebra peasei Deshayes. Kaneohe Bay, Oahu.

Terebra penicillata Hinds. Honolulu Harbor, Oahu. Waimea, Oahu.

Terebra penicillata venosa Hinds. Haena , Kauai.
Terebra propiniqua Pease. Amer. Jour. Conch. v.p.66. Honolulu Harbor, Oahu.
Terebra rosacea Pease. Amer. Jour. Conch. v.p. 65. Haena, Kauai.
Terebra roseata Adams and Reeve. Honolulu Harbor, Oahu.
Terebra sculptilis Pease. Amer. Jour. Conch. (1869) v. 65. Man. Conch. VII, p 39. Honolulu Harbor, Oahu.
Terebra straminea Gray. Haena, Kauai. Honolulu Harbor, Oahu.
Terebra strigilata Linne. Mokapu, Oahu. Haena, Kauai. Wainiha, Kauai. Moomumi, Molokai. Niihau Id.
Terebra subulata Linne. Honolulu Harbor, Oahu. Koili, Kauai.
Terebra suffusa Pease. Amer. Jour. Conch. (1869) v.p. 65. Honolulu Harbor,Oahu.
Terebra sulcata Pease. Amer. Jour. Conch. v.p. 67. Honolulu Harbor, Oahu.
Terebra swainsoni Deshayes. Honolulu Harbor, Oahu.
Terebra swainsoni inflexa Pease. Amer. Jour. Conch. v.p. 67. Honolulu Harbor, Oahu.
Terebra textilis Hinds. Honolulu Harbor, Oahu. Kona Coast, Hawaii.
Terebra tigrina Gmelin. -- duplicata Linne. Kona Coast, Hawaii.

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The Octopus and Its Babies by W.J. Bower April 21, 1943.

You all know about the octppus- that ugly looking slimy sea animal with its eight arms covered with suckers by which it grasps its prey; but I don't think many of you have seen one in the ocean. Because I'm quite sure none of you have ever seen one with its eggs and babies just hatched, I think the story of my finding one a couple of days ago may interest you. While shell collecting, wading in the shallows of Tampa Bay, I picked up a dead shell, as I often do, to look for small live shells inside. In this rather small five inch shellI was surprised to find a small octopus with arms about two inches long. I was still more surprised to find in the shell with her a lot of eggs, and several babies just hatched. At first I did not recognize what it was that filled the opening in the dead shell; but when I poked at the contents, out flashed an arm covered with suckers and I knew I had a small live octopus which had chosen the hollow of the dead shell in which to lay her eggs. The eggs lined mrst of the visible inside of the shell. They were translucent, a sort of bluish white, three eighths of an inch long and one eighth wide. They were attached to the shell by a thin short stem from each egg. There were at least fifty eggs visible. On looking more closely at the contents of the dead shell, I was greatly interested in finding several babies just hatched which had not yet emerged from the shell into the waters of the bay. A good many had probably been hatched and swam away, many of them probably to be gobbled up by other sea animals larger than they- the common fate of most of the small fry in the ocean. Although these just hatched babies were only the size of a small spider, each had its eight arms all lined with suckers. I have some of them, as well as some of the eggs, preserved in alcohol. One of the eggs is packed full with a baby just about to hatch. Another shows just a partly developed one floating in translucent jelly.

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One of the colums of the Los Angeles Evening Herald and Express is " Early Days in Los Angeles". In this article of the date Dec.4, 1943 " 50 years ago today" appeared the following item: " The Normal School zoology class and some of the members of the Los Angeles Conchology Club and friends visited San Pedro recently . Specimens were abundant for the searchers. Many sea-stars, sea-urchins and devil fish were found, also a great number of mollusks. Two rare pure white Murex trialatus were collected, one by Miss Alice Gray of the club and one by Master Levy of the Los Angeles High School."

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E.P. Chace, 724 11th St., San Pedro,Calif. Our friend Emory tangled with a band saw at the plant last week. We are happy to report that he expects to be out of the hospital in a few more days and will suffer no permanent injuries.
Mrs. Jean Wilkins, 5939 Gundry, Long Beach 5, Calif. reports that her son is now out of the hospital and recovering from an attack of pneumonia.

MINUTES OF THE NOVEMBER MEETING.

The Conchological Club of Southern California met in the Director's Room of the Los Angeles County Museum at 2:30 P.M. Sunday, Nov. 28, 1943. The meeting was called to order by president E.P. Baker. There were 25 present. The president appointed a nominating committee of three, Dr. W.O. Gregg, John Burch and Mrs. Mary Cornett to report at the December meeting.

The members were reminded of our Christmas custom of bringing packages of duplicate material to be exchanged for those brought by other members.

An expected talk by Dr. Woodring was deferred to a later time because he had been called out of the city.

The paper given by A.M. Strong was thoroughly enjoyed as his talks always are. The subject was Columbellidae and will be outlined elsewhere in the minutes. His beautiful illustrative material was appreciated by all, and was the envy of us all. The meeting then adjourned. Effie M. Clark, Secretary.

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We wish to acknowledge with thanks the generous donations of the following to the costs of mimeographing these minutes: W.J. Bower, St. Petersburg, Fla.; F. Tobleman, Newark, N.J.; Leslie Hubricht , Norfolk, Virginia; Viola Bristol, Natural History Museum, San Diego, Calif.; Dr. Calvin Goodrich, Ann Arbor, Mich.; A.W. Fahrenbruck, Cincinnati, Ohio; Mrs. Mary Cornett, Los Angeles, Calif.; Mary D. Gibbons, Baltimore, Maryland; Mrs. Leona Linderman, Long Beach, Calif.; Mr. S.G. Skinner, Long Beach, Calif.; Mrs. Ruth Libby, Long Beach, Calif.

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The following random notes may be of interest to those of our members who are interested in trying to acquire adequate libraries of conchological literature. From time to time your editor will try to outline sources of material on the fauna of different sections. If any of the members have additional information regarding publications on mollusks of New Zealand we will be pleased to hear from them. The first difficulty encountered is that in New Zealand as elsewhere the papers dealing with conchology are published in journals of a general nature, but with the unfortunate difference that it does not seem to be the custom to supply separates. The result is that in order to have the papers on conchology it becomes necessary to get large files of the journals. Separates seem never to be offered for sale. Indeed the museums do not seem to publish price lists of publications of any kind. The only publication we know of issued by a museum is " New Zealand Recent and Fossil Mollusca of the Family Turridae" by AWB Powell, 1942. 160 pp & plates, published by the Auckland Institute and Museum, price L 1..5..0. The government printer, Wellington, N.Z. issues a list of publications in which, however, the only shellfish items (excluding fossils) are: " Manual of the N.Z. Mollusca" 1880. F.W. Hutton 3/ plus 7 d postage; " Manual of the N.Z. Mollusca" 1915 H. Suter 2 vols. each 10/-; " Brachiopod Morphology and Genera (Recent and Tertiary)", J.A. Thomson, 346 pp 17/ plus 7 d postage. The city booksellers of New Zealand list and stock : Bucknill " Sea Shells of New Zealand" 7/6 and Powell " Shellfish of New Zealand" 5/6.

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" The Naturalist's Directory", 33rd Edition, 1943 published by The Casino Press, Salem, Mass. has been received. Price $2.50. 193 pp.

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We are in receipt of a very interesting publication containing Three Addresses, Delivered at the Meeting Commemorating the Fiftieth Anniversary of the Field Museum of Natural History- Sept. 15, 1943. They are by Mr. Stanley Field, President of the Field Museum; Mr. Albert Eide Parr, Director of the American Museum of Natural History, and Mr. Robert Maynard Hutchins, President of the University of Chicago.

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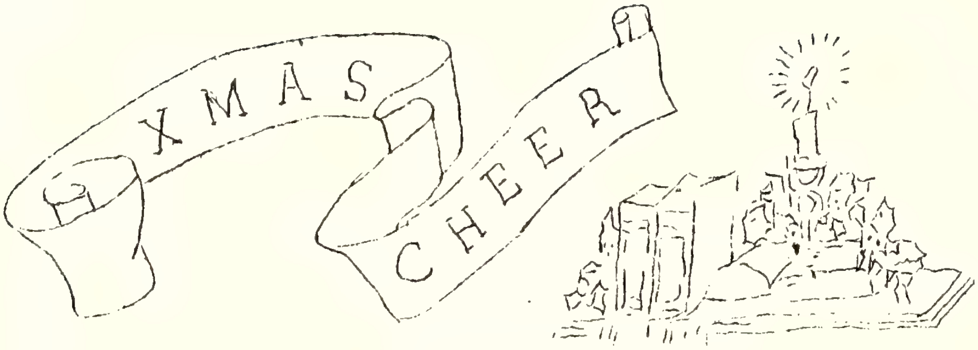

To all of our friends from the Burches, John, Rose,
Tom, and Beatrice.

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The following are a few changes we recently made on some labels on sets from the Atlantic Coast. Perhaps others have these shells from their correspondents. Any objections ?

Fissurella schrami Fischer to Fissurella angusta Gmelin (Johnsonia #10, p 7)
Xenophora conchyliophora Born to X. trochiformis Born (Johnsonia #8, p 2)
Littorina minima 'Gray' Wood to L. mespillum Megerle v. Muhlfeld (Johnsonia #7)
Tectarius trochiformis Dillwyn to T. tuberculatus Wood (Johnsonia #4,p 2)
Acanthochites to Acanthochitona Gray on many sets.
Lima inflata Lamarck to L. dehiscens Conrad (but with reservations for future reference. We label our common West Coast Lima as L. dehiscens Conrad. We seem to have but one set of this species from the other coast, sent us by the McGintys and dredged off Palm Beach, Fla. These can be easily picked out of a series of the same name from this coast. Obviously neither of them are the same shell sent us from such localities as the Mediterranean and labelled Lima inflata Lam. We rather expect some expert to take another guess on these.)
Lucapina adspersa Philippi to Lucapina sowerbii Sowerby (Johnsonia #10, p 14)
Lucapina cancellata Sowerby to Lucapina suffusa Reeve (Johnsonoa No. 10, p 17)
Diadora microsticta Dall to Diadora jaumei Aguayo & Rehder ?
Tegula indusii Gmelin to Tegula scalare Anton.
Conus proteus Hwass to Conus spurius Gmelin (Johnsonia #6, p 19)
Conus nebulosus Hwass to Conus regius Gmelin (Johnsonia #6, p 3)
Conus mus Hwass to Conus citrinus Gmelin (Johnsonia #6, p 7)
Conus pealii Green to Conus jaspideus Gmelin (Johnsonia #6, p 10)
Conus agassizii Dall to Conus villepinii Fischer & Bernardi (Johnsonia #6, p 25
Conus testudinarius Hwass to Conus ranunculus Hwass (Johnsonia #6, p 32)

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Dr. B.R. Bales, Circleville, Ohio- " We are expecting our son home on furlough some time this month and are mighty anxious to see him. Fred Koto has gone south and is now at Bradenton Beach, Fla. He reports good sifting and has taken Erato maugeriae,Tellina lintea, Tellidora cristata, Sigaticus semisulcatus and other good things. I envy him, but we will stay north again this year. They can make me take it, but they can't make me like it."

MINUTES OF THE LONG BEACH SHELL CLUB
December 1943

The members of the Long Beach Shell Club met at the home of Mr. and Mrs. Claude Lehman, 248 Ximeono St., Long Beach, Sunday afternoon, Dec. 5th. This was an extra affair and meeting, being our annual Christmas Party, which for several years has been held at the Lehman home. A festivem seasonal atmosphere filled the home, a beautiful tree, lighted and decorated filled one corner, a Bethlehem manger scene, complete with figures was arranged on the mantle, the choir boys and gels on the piano, the candles on the sideboard; all tended to make one thankful we are here and safe as yet.

The meeting was called to order by our president, Ralph Borman. He called upon Mrs. Borman to hand out copies of the history of the club that had been prepared for the library records. A bill for the mimeographing of same was presented and ordered paid $1.50. On motion the club sent thanks also to the one who mimeographed the work, a friend of the Bormans.

E.P. Chace was reported hospitalized on account of an argument with a skill saw. The saw came off best and Emory is having two fingers cared for by a pretty nurse. The club Historian, Mrs. Borman , read the history of the club for the year. The club's appreciation for her work was expressed by vote. The fine publicity in the city's papers was mentioned and Mrs. Linderman thanked for her consistent wotk . She, in turn, mentioned the fine cooperation of Mr. Case of the Long Beach Sun, that he was just returning home from the hospital after a serious operation and the club voted to write him a note of sympathy and appreciation.

The Nominating Committee reported through Miss Lena Higgins the following officers for the year 1944, Ralph Borman- President, Leona Linderman- Vice-President and Program Chairman, Grace Stillwell- Secretary and Treasurer. No other nominations being made, the nominations were voted closed and the report of the Committee accepted. On motion, the secretary was asked to cast a ballot for the club making the nomination an election. ' Twas done. On motion it was voted to thank all concerned who had so faithfully carried on during the year and are now retiring. As to the president's appointments of committeemen, he stated that he would continue the same appointed last year.

The treasurer gave a summary report and called for dues to be paid in as it was probable that dues will be prohibited in the Public Library. Twenty three paid their dues for the new year at 25¢, a total of $5.75.

The club business was finished and the order of the day turned over to the hostess and the Program Chairman. Mrs. Lehman introduced her daughter, Eleanor, and her accompanist Julia Moreland, who whistled for us, first a beauiful Christmas carol and then the March of the Wooden Soldiers. Following this, Ned Baker led the group in the singing of several carols. Miss Moreland playing for us.

With the drawing of slips, three Santa Claus, were chosen who passed around the gifts taken from the stockings hung upon the mantle. The gifts consisted of shell exchanges, each guest bringing a package of shells to exchange. Each was thenasked to open their gifts and to describe the contents, what and where found, to tell all about them they could, the one giving the best account to receive a prize. Your Sect. didn't see the prize, but was told it cost 8 points. Anyhow the judges, Claude Lehman, Meade French and Mrs. Hill awared it to Mary Borman.

Our hostess, with the help of several good friends, served real holiday refreshments, creamed chicken on hot biscuits, salad, coffee, and plum pudding. For once the subject of shells was almost forgotten. Thirty five were present to enjoy the days sociability. Beginning with the new year we will meet at the Long Beach City Library in the Children's Room downstairs. the second Sunday afternoon of the month at 2:30 P.M. The public is cordially invited if interested in shells. Next meeting January 9, 1944. E.P. Baker-Secretary

Mr. and Mrs. E.P. Baker, 417 S. Downey Ave.,Downey, Calif. " The Bakers, Ned and Irene, report a collecting trip to Newport Bay on Monday, Nov. 29th with a low tide of -- 1.8. They went especially to dig for Barnea pacifica Stearns, our Western Piddock, on the west shore of Lido Isle. With much being said of dredging and enlarging Newport Bay, they were afraid this particular bed would be destroyed. They were fortunate in securing 42, but after transportation and cleaning only 30 were perfect. These piddocks are not only hard to locate but are so fragile that to dig them out and prepare them for the cabinet in a per--fect condition is no small job. Among other finds, they picked up over 200 bubble shells, Bulla gouldiana Pilsbry , 160 of them being perfect specimens after cleaning. Both of these items are for exchange, first come first served.

Dr. Wm. J. Clench, Museum of Comparative Zoology, Harvard College, Cambridge, Mass. " We hope to have two numbers- about 28 pages more in Johnsonia by the last of Dec. Both are in press and the 12 page number will be finished by the end of the week. Both will be mailed at one time to save expense and labor. I have lost 8 men in two years.

Harry, my son, left the first of November for the Army. However, it has to be."

Morris K. Jacobson, 455 B. 139 St., Rockaway, N.Y. " With the onset of winter, land collecting hereabouts is pretty well at a standstill, but I still pick up the local marines with little difficulty. I paid another visit to Hunter Island near Orchard Beach in Pelham Bay Park and was again impressed with the rich marine fauna that is to be found here since the sewage purification plant was installed. I found some beautifully banded, black and white, Littorina saxatile and noticed that the L. littorea are considerably smaller than those in Jamaica Bay. My most interesting find was a very fresh looking L. irrorata, rare this far north (cf. Johnsonia), but even a reward of 25¢ for another and 50¢ for a living specimen brought no results froma host of youngsters who diligently scurried about for half an hour and took no less than fifteen minutes to realize that there was a difference between the shell I wanted and the L. littorea that covered the rocks.

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Any of the local collectors fortunate enough to have a Christmas vacation and the inclination to do some collecting, will find a few of the best tides of the year to help them.

Dec. 24- 2:47 P.M. Minus 0.5
Dec. 25- 3:25 P.M. " 1.0
Dec. 26- 4:05 P.M. " 1.3
Dec. 27- 4:47 P.M. " 1.5
Dec. 28- 5:32 P.M. " 1.4
Dec. 29- 6:18 P.M. " 1.2

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The Bulletin of the Natural History Museum of San Diego for Dec. has been received and is as usual of great interest. Nature lovers of San Diego are indeed fortunate in having such a fine organization and in being able to enjoy so many different nature walks and excursions under competent leadership.

A new Mytilus has been added to the fauna of the California coast. About two years ago a species of Mytilus appeared in a number of different localities, and in such amazing abundance as to be immediately noticeable to all local collectors. We were all disposed to label it Mytilus edulis Linne but it seemed to be definitely different from the specimens of this species taken from the long established colonies to the north. The new species is particularly common now throughout Newport Bay occuring in great numbers on nearly all floats and pilings.

Comparison of these shells with specimens of Mytilus edulis from some localities of northern Europe show very little difference if any at first examination. The proper classification of this shell has been a mooted question and is being discussed by all local collectors.

We now have a letter which may settle the matter from Miss Viola S. Bristol, Curator of Mollusks, Natural History Museum, Balboa Park, San Diego, Calif. The letter follows:

" A short time ago, Dr. W.R. Coe brought to our attention a species of Mytilus, very abundant for the first time in 15 years, on the pier of the Scripps Institution of Oceanography. We have been calling this Mytilus edulis Linne but, upon examination of the animal, he found it quite different. He sent specimens to Dr. Bartsch, who reports that they are Mytilus dunkeri Reeve, introduced with oysters from Japan.

The shells are much higher proportionally and more triangularly shaped than Mytilus edulis.

Miss Wilson found fine specimens under the Mission Beach bridge and I found just one specimen under the Causeway at the far side of the beach.

I wondered whether you have found them plentiful in your area. Shall be glad to hear."

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Mr. and Mrs. J. Barrett, 2428 Kalakua Ave., Honolulu, Hawaii. We enjoyed a recent visit with them. They have been living in Florida and paid us a call on their return trip to their home and business in Honolulu.

Mrs. E.C. Elliott,1. Marden Road, Payneham, South Australia. Many of us have fine specimens in our collections sent us by Mrs. Elliott. We were pleased to receive a beautiful Christmas card and letter from her. She advises that their club still holds monthly meetings but little shell work has been done since the war bagan. The activities of her family is nicely stated as follows: " John is a Lieut. in the Intelligence Section in New Guinea, and Ron is flying a dive bomber. So that accounts for our family."

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We are in receipt of some interesting papers.

" The Poison Cone Shell", The American Journal of Tropical Medicine, Vol. 23, No. 1, January, 1943, by William J. Clench and Yoshio Kondo. This paper of some 18 pages is quite exhaustive and intensely interesting. It is illustrated with 4 pages of prints.

" The Recent Mollusks of the Family Neritidae of the West Indian Region" by Henry Drummond Russell. This paper, the abstract of a dissertation, may be obtained from Dean Howard M. LeSourd, Boston University Graduate School, Boston, Mass.

" Fresh-Water Shells from Cave Deposits in the Southern Shan States, Burma", by J. Bequaert, reprinted from Transactions of the American Philosophical Society, New Series, Vol. XXXII, Part III, 1943.

" The Molluscan Intermediate Host of the Blood Fluke, Schistosoma Japonicum Katsurada, in the Philippines" by J. Bequaert " With a Note on the Genus Blanfordia" by H.A. Pilsbry, reprinted from the Journal of Parasitology,Sept. 1934, No. 5.

While the last paper is not new it deals with a subject in which several of our members have been recently interested.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
January 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held January 23, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.
Phone 6957

It is our intention to run in the next issue a complete list of all members with their correct addresses and telephone numbers if any. Please also include your zone number if any. In connection with this list we propose to list the interests of the members and they are urged to return to the editor at once a card or letter listing the numbers on the following list in which they are interested in addition to the information about their addresses. We will also be happy to run the names and interests of those of our friends who care to write us.

1. World Wide Shells
2. Pacific Coast Shells
3. Marine Shells
4. Land and Fresh Water Shells
5. Buy Shells
6. Sell Shells
7. Exchange Shells
8. Buy Books
9. Field Collecting
10. Marine Life in General
11. Fossil Shells

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Minutes of the December Meeting- 1943

The Conchological Club of Southern California met in the Director's Room of the Los Angeles County Museum Sunday, Dec. 26, 1943. The meeting was called to order at 3 P.M. by president Baker. Mrs. Effie Clark was unable to attend so Mrs. E.P. Chace was appointed to act as secretary. Under communications John Burch reported a letter from Dr. Calvin Goodrich that he is sending us a box of shells for distribution. It will probably be here for the January meeting. Under collecting notes, Bill Reeder collected at Playa del Rey finding Kellettia kellettii Forbes very abundant, and Mr. and Mrs. E.P. Baker collected at Anaheim Landing finding Zirfaea,Pholadidea and Barnea in the shale banks. The report of the nominating committee was : Mrs. E.M. Chace for president; Mr. George Willett for vice-president; and Mrs. Effie M. Clark for secretary. It was moved and carried that nominations be closed and the secretary instructed to cast a unanimous ballot.

The permanent meeting place of the Long Beach Shell Club on the second sund of each month at 2:30 P.M. in the Children's Room of the Long Beach Public Library was announced and all members of the club invited to attend. The meeting was then turned over to Dr. H.R. Hill, program chairman,
The Christmas exchange packages of shells were distributed and made the basis of a contest. Each member rose to make a short talk about the shells he had received in his package. The winner received the prize donated by Dr. Hill. Mr. Charles Allen was decided the winner. Many of the talks were very good.

Before adjournment the new committees were announced by the new president.
Press Committee: John Q. Burch, Mr. E.P. Chace and Mr. E.P. Baker
Nomenclature and Publications: Mr. A.M. Strong, Mr. E.P. Chace, and Mr. John Burch
Membership: Mr. E.P. Baker, Dr. H.R. Hill, and Tom Burch
Program Committee: Mr. George Willett, Mrs. Effie M. Clark, and Dr. W.O. Gregg.

E.M. Chace- Sec-pro-tem.

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Notes on Octopus by Roy L. Morrison

Mr. Bower's article in the Dec. 1943 number of the Minutes of the Conchological Club on the Octopus brings out the following observations of my own at Mission Bay over a period of some twelve years.

My first observation of the hatching of their eggs was in July, 1929. While collecting at the clam bed just north of the Mission Bay bridge, I found an Octopus with tentacles all of eight inches long. You will note that Mr. Bowers speaks of his specimen as having tentacles of about two inches in length. Right here let me say that this would provide an interesting study to determine the age at which the Octopus lays its first eggs, if their size and length of tentacles are any indication as to their age. I have collected hundreds of Octopus with eggs whose tentacles were all of six to ten inches or more in length but none so small as the one of which he speaks.

This particular clam bed is quite famous for its abundant supply of Octopus being just the ideal type of habitat. People have collected them here for years by the sackfull, particularly the Orientals,Portuguese, and Italian fishermen.

The eggs of the Octopus usually take the form of a small bunch of grapes. The first group of eggs I found hatched out in my hand while held in the water. The membrane was so transparent that their eyes looked like two tiny black pin heads and those that I have preserved still show after all these years. I kept for two weeks some three dozen of these in a quart jar and could possibly have kept them much longer had I not preserved them. At the age of two weeks they measured five to six mm in length and three to four mm in width, indicating that their growth is not the same although hatched precisely at the same instant.

From the time of hatching to the time I preserved them, when touched, they would change color or emit the ink. This evidence gives them the characteristic traits of the adult. Some exertion was evident just before the bursting of the egg sack but upon emerging they moved off rapidly into the water.

The temperature of the water at the time of hatching has been warm, this I have found to be true over this period of years and especially so on my observation of 1943. Thus temperature has its effect upon reproduction.

It is interesting to note the reported time of the hatching of the eggs. Mr. Bower of Florida gives the time as the month of April. My observations have all occured in July. Calvin and Ricketts state that the Octopus under their observation laid its eggs early in July and that the eggs hatched in the middle of September. Calvih and Ricketts observations, however, were made in the laboratory under simulated habitat, whether this would make any difference in their dates had they observed their specimens under natural habitats is a question.

We have now the recording of the hatching of the eggs of the Octopus from April in Florida, July in Southern California and September in the Monterey area. Each station is about five or six hundred iles apart in lattitude. Does lattitude play a part in the hatching season ? It would seem so, yes. As the growing season of vegetation advances northward, thus the reproduction season for the mollusk might follow the same cycle.

What then is the life span of the mollusk ? So far in my reading and stud I have found no statement as to what it might be. The specimens I observed were Polypus bimaculatus (Verrill).

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A few brief notes on our observations of this group might be in order. In dredging around Santa Monica Bay we located a number of gravel beds at different depths. While working the large gravel bottom off Redondo Beach in about 25 fathoms we brought up great numbers of very small specimens of Polypus . This did not seem to be true of the material from 75 fathoms and deeper. We have taken two littoral species from a number of different localities P. californicus Berry and P. bimaculatus Verrill. We have several preserved specimens to be definitely classified by some student of the group.

An interesting thing happenedd in the spring of the year 1937. Numbers of the large squid which we took to be Rossia pacifica Berry washed ashore along the beaches south of Redondo Beach. They came in dead and in such numbers as to cause a nuisance. We have never seen them before or since. The only plausible explanation seemed to be that the squids were suffering from some disease that amounted to a squid plague. Loligo opalescens Berry is fairly common off shore at Redondo Beach but we have never seen one washed ashore.

And while on the subject of the Cephalopoda it is interesting to note that insofar as we know there is no record of a specimen of Argonauta pacifica Dall having been taken anywhere on the coast of the mainland, and yet it is not uncommon on the off shore islands. We have several specimens from Catalina Island.

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Dr. Calvin Goodrich, University of Michigan, Ann Arbor, Mich. " The note on Christmas shell exchanges in the minutes of the CCSC has suggested sending duplicates of Unionidae of a very old collection upon the chance that some members may care enough for such things as to clean them and search out the modern names. A few lots of marines, most of them taken by J.B. Steere in the 1870 s, are included for seasoning".

A large box containing some sixty lots of very interesting things has arrived by express and will be on hand at the next meeting of the club for distribution to the members. You had better be present.

Professor Charles E. Burt, Southwestern College, Winfield, Kansas. " Thank you for sending me the minutes of the Conchological Club of Southern California, which I have read with interest. Under separate cover I am sending you reprints of a special report on snails that I prepared with Dr. Cheatum of Southern Methodist University some time ago. In another package I am sending several slabs of fossil snails taken at Downey, Bannock Co., Idaho, in June 1937. They were identified at the U.S. National Museum as Goniobasis tenera. "

We are very grateful to Dr. Burt for the addition to our library of two papers " An Annotated List of the Snails of Dallas County, Texas" by Elmer P. Cheatum and Charles E. Burt- Reprinted from Field and Laboratory, Nov. 1933, and April, 1934.

We have received some interesting papers recently.
" A Systematic List of the Echinodermata, Foraminifera, Hydroida, Brachiopoda of Southern Australia" 36 page booklet published by the Malacological Society of South Australia- Publication No. 3- Edited by Bernard C. Cotton and Frank Godfrey- January 30, 1943. Price- One Shilling and Sixpence (Post Paid).
The South Australian Naturalist, June 1, 1943 contains among other articles a very fine paper on the Australian Sea Pen, Sarcophyllum grande Gray.
Tide Tables-Pacific Ocean and Indian Ocean- 1944 - Serial No. 653- and for sale by the U.S. Coast and Geodetic Survey, Washington, D.C. Price 25¢. This is quite a volume of 337 pages. We probably will not have use for these tables for all these interesting places but we already have our money's worth just thinking about them.

We have a note from Dr. Paul Bartsch " At the request of the medical services of the Army and Navy, three of my papers have been published for distribution among their medical forces". And we are very grateful to Dr. Bartsch for having sent us the following interesting papers : " Molluscan Intermediate Hosts of the Asiatic Blood Fluke, Schistosoma Japonicum, and Species Confused with Them", by Paul Bartsch, Smithsonian Miscellaneous Collections, Vol. 95, No. 5, May 11, 1936. 60 pages and 8 plates.
" A New Intermediate Host of the Asiatic Blood Fluke, Schistosoma Japonicum" by Paul Bartsch- Proceedings of the Biological Society of Washington, Vol. 49, pp. 139-142, August 22, 1936.
" Malacology- A New Intermediate Host of the Asiatic Blood Fluke, Schistosoma Japonicum Katsurata" by Paul Bartsch- Reprinted from Journal of the Washington Academy of Sciences, Vol. 29, No. 4, April 15, 1939.

We have at hand the current volume of the " Proceedings of the Malacological Society of London", 10 September, 1943- Vol. 25, part 4. In addition to the notes, addresses etc. this issue contains three fine papers: " Book Notes" by J.R. Le B. Tomlin; " Some Notes on the Madras Bullia" by M.D. Crichton; " Holten's Systematic List of the Shells of Chemnitz" by R. Winckworth.

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We are still making changes in our labels on our collection of shells from the Atlantic coast. Until we change them back again or to another name here are a few more changes for better or for worse.

Pedalion semiaurita Linne to Pteria
Ostrea equestris Say to O. spirata Orb.
Ostrea frons Linne to Ostrea limacella Lamarck.
Spondylus echinatus echinatus Martyn to S. ictericus Reeve (Nautilus 51-38)
Spondylus echinatus americanus Lamarck to S. americanus Lamarck.
Congeria leucopheata Conrad to Mytilopsis leucopheata Conrad.
Chama sarda Reeve to Chama floridana Lamarck. (Nautilus 51-3)
Lucina jamaicensis Lamarck to Lucina pectinatus Gmelin.
Rochefortia planulata Stimpson to Mysella planulata Stimpson.
Lasaea rubra Montagu to Kellia rubra Montagu.
Emarginula frenulata Dall to Rimula frenulata Dall
Busycon perversum Linne to Busycon contrarium Linne.
Cymatosyrinx thea thea Dall to Cerodrillia thea thea Dall
Clathrodrillia to Monilispira on numerous species.
Clathrodrillia ostrearum Stearns to Crassispira ostrearum Stearns.
Clathrodrillia albinodata Reeve to Monilispira monilis Bartsch and Rehder.
Mangilia cerinella Dall to Kurtziella cerinella Dall
Mangilia stellata filosa Dall to Stellostoma stellata filosa Dall.
Cavolina trispinosa ' Le Seur' Blainville to Diacria trispinosa.
Melampus lineatus Say to Melampus bidentatus Say.

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The program of the Conchological Club of Southern California for the year 1944 (commencing at February meeting) will be devoted to a systematic, geographical and ecological study of west American marine mollusks, based upon and in the order of Dr. Dall's Bulletin 112. It is planned to consider the families, their genera and species, with the idea of gathering all possible information regarding their taxonomy,distribution and ecology, additional or emendatory to that given in Bulletin 112. It is hoped that when this program is completed (probably in 2 or 3 years), there will be on record enough new data on the mollusks of this region to warrant publication of a new check list.

In carrying out this program, the discussion of certain families and genera will be assigned to various members of the club. It is suggested that such discussion be limited, so far as possible, to the area under consider-ation, and that it consist mainly of concise definitions of the higher groups (above species), their distribution and ecology, and their relationships to allied groups. The discussion of the species, themselves, will be a general one by all the membership of the club. Members should familiarize themselves with the topic to be discussed at each meeting, and should bring or send to the meeting any unusual data or specimens pertinent to such topic.

Program Committee

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Tides

Any of the members able to do a little collecting without being an absentee from the job will find a few really good ones shortly.

Sunday, Jan. 23--	2:10 P.M.	minus	1.3
Monday, Jan. 24--	2:54 P.M.	"	1.6
Tuesday,Jan. 25--	3:36 P.M.	"	1.8
Wesnesday,Jan.26-	4:17 P.M.	"	1.6
Thursday,Jan. 27-	4:59 P.M.	"	1.3
Monday, Feb. 21--	1:53 P.M.	"	1.3
Tuesday,Feb. 22--	2:33 P.M.	"	1.6
Wednesday,Feb.23-	3:12 P.M.	"	1.6
Thursday,Feb. 24-	3:50 P.M.	"	1.4
Friday,Feb. 25-	4:29 P.M.	"	0.9

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Cymatium cynocephalum Lamarck- Dr. B.R. Bales sends an interesting little note about this name. " Regarding Cymatium that you have listed as cyanocephalum I was set right on this name by Dr. Pilsbry. The real name is cynocephalum, meaning dog head, while if you add the a and write it as cyanocephalum , it means blue head."

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We are in receipt of several excellent new publications.

" On the Generic Relationships of Certain Californian Xerophile Snails" by S. Stillman Berry- Transactions of the San Diego Society of Natural History, Vol. X, No. 1, pp. 1-24, plates 1-2, figs. 1-8 map.

" New Mollusks from the Round Mountain Silt (Temblor) Miocene of California" by A. Myra Keen- Transactions of the San Diego Society of Natural History, Vol. X, No. 2, pp. 25-60, plates 3-4, figs. 1-5. Dec. 30, 1943.

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" Abreviations of Author's Names in Malacology" by Leo A. Jachowski and Donald C. Scott- University of Michigan, Ann Arbor, Mich.

This 38 page booklet should save a great deal of confusion and should be in every conchological library.

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Miss Miriam Shepard, Box 164, Route 2, Portland 10, Oregon. We are grateful to Miss Shepard for her generous contribution to our minutes expense fund and glad to know of another active conchologist in Oregon.

MINUTES OF THE LONG BEACH SHELL CLUB

The next meeting will be held on February 13, at 2:30 P.M. at the Long Beach City Library in the Children's Room downstairs. We are meeting the second sunday afternoon of each month.

The Long Beach Shell Club met Jab. 9 in the Childrens Room of the Public Library in Lincoln Park. Mr. Ralph Bormann, the president called the meeting to order- twenty members being present.

The shell club as a group had been requested by the Red Cross to offer blood plasma. Since nearly all the members have been donating individually or through other organizations the secretary was instructed to inform the Red Cross that the members thought it better to continue as they are now doing.

Miss Rogers reported the death of Mrs. E.E. Hand and made a motion that a note of sympathy be sent to the daughter and son.

A motion was made by Mr. Bormann that a letter of appreciation be sent to Mrs. Brewitt, librarian, thanking her for the use of the Children's Room. The club found the room most enjoyable with its excellent lighting and the atmosphere created by the books and the lovely pictures.

A letter from Dr. Paul Bartsch reported by Mr. Bormann stated he was sending the club a copy of three papers prepared for the medical service of the army and navy. The reprints have been placed in the library of the shell club.

The speaker, Mr. Charles Allen, not having arrived, the members held an informal but most interesting round table discussion of shell collecting. A number of members gave detailed information on what, where and how to collect.

Mr. Emory Chace had brought a large collection of specimens which he so graciously labelled and generously gave the members after the meeting had adjourned.

Grace Stillwell, Secretary.

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Mr. J.R. le B. Tomlin, 23 Boscobel Road, St. Leonard's-on-Sea, England. We are very grateful to Mr. Tomlin for having sent us some sixteen different separates making a welcome addition to our library.

Mr. M.E. Appell, 8 Frederick St., Kitchener, Ontario, Canada. We have a very interesting letter from Mr. Appell who will be interested in hearing from those wishing to exchange for fresh water shells of his section. Those interested in buttons carved from shells will find a kindred spirit.

Major H.S. Mort, 13 Milner St., Mossman, N.S.W., Australia. We regret to hear that our old friend is still ill and confined. However, we are flattered by the following note." As I cannot go collecting anything in the way of literature is of interest and I find your minutes of meetings and collecting notes very interesting and shall see if we cannot start something of the same sort here.

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-Exchanges-

We will be glad to run exchange notices from anyone interested.

COLLECTING SHELLS IN PERU

by Walter J. Eyerdam

A few notes on some shells that I collected at Puno, Peru on Lake Titicaca may be of interest for the Minutes. The following is taken from my diary on Tuesday, September 20th, 1938 at Puno.

Woke up on the train at 6:00 A.M. and observed the fascinating scenery before we reached Puno on Lake Titicaca. Numerous stone huts and small farms of the Aymara Indians are perched on the brown hillsides. Saw many interesting flowers in bloom although this is not yet the proper season for flowers. On arrival at Puno we went through the regular customs, passport and police inspection. There are four steamers anchored at the quay and about a dozen balsa bulrush boats in the harbor. The weather was fine and sunny in the morning.

Lake Titicaca is ½ the size of Lake Ontario and lies at an elevation of 12,500 feet on the Alti Plano between the Illimani and Sorato ranges. It is freshwater with a peculiar mineral content, for it is said that iron never rusts and the water never freezes although it seems to get quite cold up there. There are numerous small streams flowing into it from the neighboring mountains and its outlet, the Deseguadero river runs into lake Poopo which has no outlet and is saline.

The shores of the lake harbored the progenitors of the great Inca and pre Inca civilizations which developed around the ancient temple city of Tiahuanacu on the Bolivian end of the lake. The boat that we are on is the " Inca", a first class little steamer built in Glasgow. While we had time, Alan Beetle and I went for a short walk along the shore where Alan observed the rushes that are used for native boats that grow in profusion along the shallow shore. It is a species of Cyperus as he had supposed. I collected several handfuls of shells that were cast up in windrows and in small hollows. These were (1) *Pisidium titicacense Pilsbry*,(2) *Musculium patagonicum Pilsbry* ?, (3) *Planorbis (Taphius) andecolus d' Orb.* , (4) *Littoridina andecolus d' Orb.* and (5) *Littoridina berryi Pilsbry.* One or two of these are endemic species but there are probably no endemic genera in the lake thus indicating that it is of comparatively recent geological time. Practically all of the large lakes in Patagonia are also of a rather recent geological origin, probably Pleistocene. In the deeper parts of the lake there are perhaps other species of shells but the total number for the lake probably does not exceed ten. It would have been interesting to have had our plant presses available to collect the water plants. The common species observed were Najas, Anacharis, Potamogeton, Myriaphyllum, and several species of Cyperus and grasses.

The Indians make their boats and mats from Cyperus and use them for trans--portation and fishing, and they rake or drag up large quantities of water plants from the bottom to feed their llamas and other live stock. Only a few small species of fishes live in the lake. A small black fish like a catfish without whiskers is sold in the markets of La Paz. It would be a great asset of the Bolivian government if carp were introduced into the lake to help feed the poor Indians. The carp would thrive on the rich bottom vegetation.

Numerous swimming and wading birds from the south temperate zone abound on the lake. Numerous gulls, cormorants, ducks, coot, grebe, and a bittern were observed on the lake. Some of the mollusks were probably brought by birds from Patagonia.

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John D. Parker, 34050421, Co. A, 801 St STR, Camp Murphy, Florida. Glad to have this latest address.

W.G. Fargo, P.O. Box 874, Pass-A-Grille Beach, Florida. Sent a new thought in his current letter. " I am wondering what the next good " blow" will bring in here along the Gulf of Mexico resulting resulting from all the considerable amount of bottom disturbed by bomb practice and general ammunition."

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MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 32-p 1
February 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held February 27, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.

We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, California
Phone 6957.

Minutes of the January Meeting- 1944

The Conchological Club of Southern California met in the Director's Room of the Los Angeles County Museum, Sunday, Jan. 24, 1944 at 2:30 P.M.

The meeting was called to order by the new president, Mrs. E.P. Chace.

Sixteen members were present including two who have been long away, Mrs. Jean Wilkins of Long Beach, and Kenneth Althaus, who has been sailing the seven seas in the Merchant Marine Service.

In the membership committee report Dr. W.O. Gregg reported seeing within recent months the Connelleys, who are well but too busy in their respective jobs to play with shells. Morris Caruthers is too far away in the south to cope with the gas shortage but is still collecting shells, and Mr. A.M. Strong who plans to resume attendance next meeting although his residence in Balboa makes it quite a trip. We shall certainly welcome his needed help in the carrying out of our new program plans. Mrs. Effie Clark reported a call from Mr. Schlagel that he had not lost interest in shells but was doing full time work and had taken in addition, in connection with the Mineralogical Club, the task of librarian which just about used up all of his leisure time.

Kenneth Althaus gave an interesting talk about his wanderings and had a few interesting shells to show but said if one wanted to collect shells one place not to start from is the Merchant Marine, at least not now, because of war time restrictions, and because their ships visited, because of war haste, only important ports that are not good collecting grounds and with but little leisure for hunting. He said the U.S. Navy was a different proposition, visiting out of the way places, and with better collecting opportunities. After his talk the large box of shells sent to the club by Dr. Calvin Goodrich of the University of Michigan, received well deserved attention till the closing time of the museum although the meeting had been for some time duly adjourned.

Effie M. Clark, Secretary

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Lt. J.W. Brookshire, 9th T.C.S. G.A.A.F., Grenada, Mississippi. We were very happy to hear from Jack recently. He was commissioned and received his wings last November. He is now serving with the troop carriers. Conrad Limbaugh, Jack's diving partner, is already seeing foreign service.

Mrs. E.M. Johnson, Box 444, Falmouth, Mass. will be interested in hearing from those interested in exchanging.

Trevor Kincaid, University of Washington, Seattle, Wash. " ... very little doing along conchological lines up in this neck of the woods. The gas situation is such that the only collecting I do is in my back yard. Don't miss the funny " Shell collector" cartoon in the last issue of Colliers."

" Nature in False-Face" by William Beebe is an interesting article on marine life appearing in the Jan. 29, 1944 issue of Colliers.

P.G. Putnam, Route 2, Anacortes, Washington. We read his recent letter with both interest and envy. " I will commence collecting in May or June this season. I am equipping my boat with a power dredge this season which will be of great assistance in deep water work. " When Mr. Putnam gets that power dredge going there will be little doubt about where to find the headquarters for northwestern shells.

He extends a cordial invitation to your editor to join him on a trip. Wonder how the hitch-kiking will be about next May or June?

Charles D. Nelson, R #5, Lake Michigan Drive, Grand Rapids, Michigan. We were very glad to hear from Mr. Nelson again and many thanks for the generous contribution to our expense fund. " I'm centering my efforts on the freshwater Unionidae and will be glad to buy or exchange with any one any where for shells I need to fill in the blank spaces in my collection."

Allyn G. Smith, 722 Santa Barbara Road, Berkeley 7, Calif. " The Monterey paper is finished but has been held up on account of the paper shortage and other war contracts which are pretty well tying up the University of California Press, which does the Academy's work. In the meantime I am putting a few finishing touches on it. Just as soon as the Academy will say they will put it through for printing I will submit it. There seems no use to do so until they give the word. My paper on Idaho land snails has been in a year or more and is still not out although it passed the proof form long ago. Phil Spicer came in to the Academy the other day after a siege of illness. He seems O.K. now and hopes to work on some of the Crocker-Beebe Expedition shells from the South Pacific. Dick McLean is not around at the moment, having left for a short trip, but I understand he is due back soon. Neither Hanna nor I have done any collecting to speak of recently, although 'Doc' was out last week-end in the Mother Lode country with Olaf Jenking. He brought back some Monadenia mormorum (Pfr.),a Helminthoglypta cypreophila (Newc.) or two, and a couple of Haplotremas of the alameda group. The best find was a single fine Monadenia hirsuta (Hanna and Rixford) from a new locality, 2 mi. N. of Jamestown, Calaveras Co., in the same columnar basalt formation as that in which it was originally found at Mountain Pass (Yosemite Junction). It is a rare thing with what seems to be an extremely limited range.

R.E. Galbreath, R 1, Box 48, Newhall, Calif. Phone Newhall 4 J2. Our cordial friend and host on several occasions will be happy to act as guide to members interested in collecting in his district. His special interests are the fossils in Tomsley,Elsmere,Clift Rock, Price Canyon, and the field near the Tunnel Beacon.

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Tides

We sometimes wonder if a few of us are not using war time restrictions as an excuse for not having sufficient 'pep' to do more collecting than we are doing. We have been having some marvelous tides with more to come and some of the things thrown up by the recent storms have been very unusual.

Saturday,	March 4--	12:57	Minus	0.2
Sunday,	March 5--	1:34 P.M.	"	0.4
Monday,	March 6--	2:04 P.M.	"	0.5
Tuesday,	March 7--	2:30 P.M.	"	0.5
Wednesday,	March 8	2:55 P.M.	"	0.4
Sunday,	March 19-11:59		"	0.4
Monday,	March 20-12:45		"	0.9
Tuesday,	March 21- 1:26 P.M.		"	1.1
Wednesday,	March 22- 2:05 P.M.		"	1.2
Thursday,	March 23- 2:42 P.M.		"	1.1
Friday,	March 24- 3:18 P.M.		"	0.7

The interests of those on the following lists will be indicated when known by the numbers in this key.

1. World Wide Shells
2. Pacific Coast Shells
3. Marine Shells
4. Land and Fresh Water Shells
5. Buy Shells
6. Sell Shells
7. Exchange Shells
8. Buy Books
9. Field Collecting
10. Marine Life in General
11. Fossil Shells

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Mr. A. Sorensen, 247 Granite St., Pacific Grove, Calif. We are very sorry to hear of the illness of Mr. Sorensen. The following note from his daughter will explain. ".. Mr. A. Sorensen has been quite ill since before New Years and he is far from well yet. (Feb.3). It has been quite a dissapointment to him as he had already secured his permit for the Mexican trip, which he now had to abandon."

Homer V. Geib, 3064 Columbia St., San Diego 1, Calif. Your editor is sincerely flattered by the following note because it seems that some one does occasionally read these notes. " Please find a little enclosure to help along with your 'notes' a very small recompense for the many fine friends they have helped me find here. And from " Greenlands icy mountains to Indies coral strand" letters still come at intervals saying, " I read in Mr. Burche's June notes that you are now living in San Diego".

Mrs. Harold R. Robertson, 136 Buffum St., Buffalo 10, New York. One interesting line in Mrs. Robertson's interesting letter should perhaps be read. " I have been trying for months to get material together for a 1943 Bulletin for the American Malacological Union, but the work progresses slowly because of the number of councillors who must be consulted. However, one of these days you will receive a Bulletin..... but it will give members a few news items and a revised membership list, about the best I can manage."

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We wish to acknowledge with thanks the generous donations of the following to the costs of mimeographing these minutes: W.G. Fargo, Pass-a-Grille, Fla.; Roy L. Morrison, San Diego, Calif.; Earl Huffman, Pasadena, Calif.; Miss M. Shepard, Portland, Oregon; D.S. & E.W. Gifford, Berkeley, Calif.; M.K. Jacobson, Rockaway, N.Y.; Mrs. J. Linkogel, Montrose, Calif.; Mrs. Jean Wilkins, Long Beach; Mr. I. Thomas, Orange, Calif.; Dr. L. Hertlein, San Francisco, Calif.; S.G. Skinner, Long Beach; Ralph Dexter, Kent, Ohio; Mrs. J.A. McBride, Long Beach; Mr. & Mrs. Ralph Bormann, Long Beach; Trevor Kincaid, Seattle, Wash.; Allyn Smith, Berkeley, Calif.; P.G. Putnam, Anacortes, Wash.; Charles D. Nelson, Grand Rapids, Mich.; Bert A. Gillham, Rockford, Iowa; F.S. Webber, Holyoke, Mass.; W.G. Paris, Boom, Tenn.; Mr. and Mrs. Harold Robertson, Buffalo, N.Y.; Ted Dranga, Miami, Fla.; Homer V. Geib, San Diego, Calif.

Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle, Wash. " A week ago Sunday Mr. Harold Harry who is in the Navy came from Portland, Oregon to see my shells. His time was so limited, however, that he didn't get to see very many of them."

Mr. Eyerdam has also sent specimens of the species Melania guppyi (see his article on pages 11 and 12). These shells will be on exhibit at the coming meeting of the club on Sunday Feb. 27 and should be of interest.

Professor Louis Brand, University of Cincinnati, Cincinnati 21, Ohio. We regret that his letter arrived after the associate membership list had been run. His interests are 1,3,4,5,7,9. He has an orchid for Charles Allen in asking for the back issues containing his experiences in Hawaiian waters.

Mrs. J.A. Hall, Concord, North Carolina. We were very happy to hear from Mrs. Hall again after several years when she was a member of our Southern California shell group. " This is my fifth season in this place. Not so warm as Calif. but an improvement on Maine winters."

Mr. and Mrs. George W. Austin, 10659 Mary Bell Ave., Roscoe, Calif. Tel. Sunland 1232. " Since coming out on the ranch, it is quite difficult to attend the club meetings, but certainly enjoy the minutes, ' keep em coming'. I surely would love to see all of you."

Mr. E. Sidney Marks, 655 Kearney Ave., Arlington, New Jersey. His interests are 1,3,4,5,6,7,8,9, and Echinodermata. " Have unavoidably been inactive for a time but will be glad to exchange. Have a large amount of East Coast material, some Canadian and others mostly from the Ritchie collection."

Lucy Nulton, East Carolina Teachers College, Greenville, North Carolina. It is always flattering to have a new friend ask to be placed on our mailing list and many thanks for the donation to our expense fund.

Frank Lyman, P.O. Lock Drawer 1412, Lantana, Florida. Thanks for the dollar, Frank. Your name is on the other list but without the data-- " publisher of ' Shell Notes', interests are 1,5,6,8,9,11 and specializes in Florida Shells" If you are not on the mailing list for Frank Lyman's notes you should be.

Dr. B.R. Bales, 149 West Main St., Circleville, Ohio. We are very sorry indeed to learn that ' Doc' has been sick. " Just a line to congratulate you on the last issue of your Minutes. As usual, it was full of meat and I surely enjoyed it as it came when I was piled up with the influenza, complicated with angina pectoris and broncho-pneumonia. I haven't been to my office for a month and hope that in another two weeks, I will be able to get out of the house, but its slow business. It has taught me that I would be a fool to try to pass another winter in the north. Either Florida or Mexico will see me next winter. I favor the latter, but Mrs. Bales is holding out for Florida, but it's a long way off and a lota water will flow under the bridge before the time comes."

Dr. W.J. Clench, Museum of Comparative Zoology, Harvard College, Cambridge 38, Mass. " I more than appreciate your including my name on your associate membership list. You have a grand and active group of people in California, and they have been grand to us and Johnsonia. We are deep in the Cardiidae now, and hope to have a big number on this important and interesting family."

J.G. Bowles, 318 South Andrew's Avenue, Fort Lauderdale, Florida. " For my own collection I would like to secure some California or South Sea shells. My interests are in the Murex,Cypraea,Conus. However, I would like some of the common California shells- marines. I would like to exchange Florida shells. I have caught quite a few good specimens in lobster traps."

Our Publicity Committee deserves a hand this month. A display article in the Los Angeles Times under the heading " Museum Lists Varied Events" gives an announcement of our next meeting.

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" Operations of Commercial Micro-Paleontologic Laboratories" by Hubert G. Schenck and Bradford C. Adams, from the Journal of Paleontology, Vol. 17, No. 6, Nov. 1943- pp 554 to 583. This is an exhaustive paper on the subject.

California Fish and Game, Volume 30, January 1944, No. 1 has been received. This is a fine periodical- 65 pages in this issue.

COLLECTING AND PRESERVING LAND SLUGS

by Wendell O. Gregg, M.D.

The present paper is written in response to numerous requests for information on preparing and preserving land slugs. During the past several months I have repeatedly been called upon to write to individuals giving them the instructions contained in the following paragraphs. It is hoped that by making this information more generally available there will be a greater effort on the part of our local naturalists and field collectors to obtain material and data on this most interesting subject, limacology.

COLLECTING SLUGS: There are certain precautions to be observed in collecting land slugs which do not concern one when collecting land snails. One must avoid against their drying up. I well recall two little black slugs taken in Soledad Canyon which were apparently different from anything else I have ever seen. They were placed in a dry, tin, pocket-size Raleigh tobacco can. That evening when I examined the day's catch, these two specimens were as dry as ' bones'. As I have learned since, when this does happen, the specimens can be restored sufficiently for study and identification. Soak the dried specimens in water for 12 hours; then preserve in 70% alcohol. The container I generally use now for collecting slugs is a one pound coffee tin with a tight fitting lid. Sufficient crumpled newspaper is added to loosely fill the can. The newspaper is then thoroughly moistened, replaced in the can and in a few minutes the excess of water is poured off. Do not punch holes in the tin. The slugs will get sufficient oxygen unless too many specimens are crowded into one container. This precaution about punching holes in the tin applies particularly when one is collecting small specimens. I have seen specimens of *Hesperarion* and *Anadenulus* escape through minute openings very much smaller than their apparent body diameter when fully extended. When collecting the larger slugs, particularly *Ariolimax*, a proportionately larger container is appropriate and there is not the danger of the larger slugs drying up.

It is a bad practice to place small slugs in the same container with snails or other animals. If placed with empty snail shells, small slugs will invariably crawl inside the shells and thus get lost. I once placed a small specimen of *Anadenulus* in the same container with a salamander. Upon my return I found the slug badly mutilated. I suspect the salamander of having tried to swallow the slug.

Definite locality and data records as well as habitat notes should be kept on all material collected. Whether collected in dry weather, wet weather, in the r i rain etc. is all important. Most of the introduced species are more active at night and may be seen crawling about the yard if one goes out with a flashlight. I have taken slugs from such diverse habitats as a rodent's burrow and a cavity in a rotten tree trunk (still standing) twelve feet above the ground. All this information is of value and should be recorded.

PREPARING AND PRESERVING SLUGS: It is first necessary to kill them in a fully extended position since if dropped directly into a preserving fluid they will suddenly contract and secrete much viscid mucus. The result will be a specimen which is next to worthless for study purposes. I have found drowning the most practical method of killing slugs preparatory to preserving them. They should be placed in a large jar full of waterfrom which all air has been excluded. I prefer a two quart Mason jar with a " Vacu-Seal" type lid. The time required for drowning depends on several factors as size of slug, species of slug, temperature etc. It varies from 12 to 72 hours. If placed in the preserving fluid before they are completely drowned they will contract and secrete mucus. If not placed in the preserving fluid soon after drowning, decomposition will ruin the specimens. When they appear fully extended and relaxed they may be taken out of the water and tested in the following manner. Touch the specimens with a pair of tweasers or other object and if no contractions are noted touch them with a drop of the preserving fluid. If any reaction is noted they should be placed back in the drowning jar for several more hours.

I have most extensively used ethyl alcohol for preserving slugs. Since the present war-time restrictions on the use of ethyl alcohol, I have been using isopropyl alcohol with equally good results. The drowned slugs should be placed first in 25% alcohol for 12 hours. At the end of this time they are placed in 50% alcohol where they should be left for 24 hours more. From the 50% alochol they are transferred to 70% alcohol where they are permanently preserved.

If alcohol is not available, 4% solution of formaldehyde may be employed. To one part of commercial formaldehyde (40%) add 9 parts of water. This makes a 4% solution. The slugs may be placed directly into the 4% formaldehyde. This becomes cloudy in a few days and should be discarded and fresh solution added. This then generally remains clear for a number of months. As a preserving fluid I have found formaldehyde solution inferior ro alcohol.

In preserving very large slugs, better results may be had by also injecting small amounts of the preserving fluid directly into the body cavity with a hypodermic syringe. Preserved slugs should not be overcrowded in their container. Always be sure that the volume of the preserving fluid is several times the volume of the slugs. Full data with catalogue numbers should be recorded on a paper label either in pencil or typewritten and placed directly in the preserving fluid with the specimens, as gumed labels attached to the outside of the glass container generally come lose and either get lost or mixed.

This method of preparing and preserving slugs is essentially that recommended by Dr. Pilsbry (see Proc. Phila. Acad. Nat. Sci., 1898, p. 255.)

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Another Species Added to Our Faunal List of Mission Bay, San Diego County, Calif.

by William K. Emerson

I took time off during my Christmas vacation from term papers and work to take advantage of the low tide of Dec. 27. Spent four hours collecting off the piling of a wharf in Mission Bay. The few hours turned out to be quite profitable as I found a small colony of Mangilia hamata Carpenter and Hyalina californica Tomlin. Both were alive. The shells were on moss and what looked to be some species of Porifera. While I have found the Hyalinas dead (in sand) in Mission Bay before and alive at several of the ocean beaches, I have never found the Mangilia there or any other place. I checked up and found that they are not on Mr. Morrison's or Miss Wilson's list of shells collected in Mission Bay. The Natural History Museum has'nt them from the locality either, so unless some one up your way has found them there, we can call it a new locality or at least add them to the list.

I really have nothing else to say about shells although I might add that on the same day at Mission Bay I found a good specimen of Murex trialatus Sowerby . While this, of course, is not a rare shell, all of the specimens I have collected, have been covered with foreign material to such an extent that they were not worth bringing home. This one, however, was nearly clean and an unusually fine specimen.

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We are in receipt of a recent publication of the Cincinnati Museum of Natural History- Reflections- October, 1943- Vol. IX, No. 1. The paper describes the exhibit of sea shells at the museum. This institution has one of the finest shell collections in the country and this year, for the first time, a large part of the shell collection is on exhibit.

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With the February meeting we take up our new project, the study of all genera in sequence following Bulletin 112. Please be present with all data you may have on the families Solemyacidae,Nuculidae, and Nuculanidae. We also wish to pass out duplicate material on each group as they are taken up.

A REMARKABLE ENDEMIC SPECIES OF MELANIA FROM THE SOLOMONS

By Walter J. Eyerdam

Lake Wailava is a small lake on Owa Raha or Santa Anna Island in the Br. Solomons about ten miles off the coast of San Cristoval Island. It is situated in a depression in the forest about $\frac{1}{4}$ mile from the sea, roughly oval and about one eighth of a square mile in area. Santa Ana Island is less than five miles in surface, still supporting a considerable portion of virgin forest in which are endemic forms of birds. The Whitney expedition of which I was a member found several species that were new to science. These were the fantail *Rhipidura rufifrons kuperi* Mayr, *Myzomela nigrita tristrami* Ramsay, a honey eater and a beautiful subspecies of a fruit dove, *Ptilinopus rhodostictus cyanopterus* Mayr., This rare little dove has also been found on Ugi and Rennell islands by the expedition.

The lake level is generally about the same except at intervals of many years when a long drought has caused it to recede to deeper parts. It has apparently no outlet and the water has a peculiar saline, phosphate taste. A good deal of phosphate has been washed as fine silt into the lake by heavy rains, so the concentrated solution in time of drought must attain a high degree of salinity. Still it does not destroy the animals that live in it. One of the natives caught fish, a species of trout when the lake had shrunk to its smallest size in 20 years.

There are no canoes on the lake, but sometimes the natives carry one or two of them over there for hunting and fishing. Henry Kuper, the German planter, who is the husband of the island princess, once tried to fathom the depths, but the results were dissappointing. The greatest depth was about 160 feet but the bottom is so soft that the lead sunk deeper and deeper. When the lake is receding, it is very dangerous to approach, unless one knows the character of the treacherous bottom and avoids treading anywhere upon it. At that time a crust of phosphate forms on the surface and it looks like solid ground. Some years ago, Mr. Kuper went to the lake with an old man to hunt crocodiles. They had taken a rather heavy toll of pigs and an occasional native. Walking out on a log he blithely stepped off thinking it was safe to walk upon. Instantly he went down out of sight, but had presence of mind to hold the rifle hight and straight above his head. In another moment he would have sunken down too far if the old Kanaka had not grabbed the gun and started to pull him up. In his excitement Kuper accidentally pulled the trigger. The bullet tore a piece off of the native's chin and face but he held on and kept pulling until Kuper was safe on the log.

The lake species of croc is the estuarine *Crocodilus porosus* which ranges from India to the Solomons. At certain times of the year females come to the lake to lay their eggs. One of the boys brought in several while I was stopping with the Kupers. I sampled one of the eggs but the flavor is not very good except to one that is very hungry. In cooking it passes quite well but the croc egg is mostly albumen and is a very gooey morsel.

I partially explored the lake which looked rather unpromising. Most of the bottom is a rotten stinking ooze. There are a few fresh water insectsand a number of microscopic organisms. Only one species of mollusk inhabits the lake. It is the remarkable endemic species *Melania guppyi* E.A. Smith which was described from a single specimen taken from the stomach of a small fish. I found about a hundred specimens in good condition that had apparently passed through the intestines of the small fish that are perhaps endemic to the lake.

Mr. Guppy, the great naturalist, sent the originally discovered shells to Edgar A. Smith at the British Museum who described it as " a very remarkable and distinct species." Its length is about $1\frac{1}{4}$ inches and its sharp pointed spire is sometimes seen protruding through the vent of the fish which evidently digests the snail and ejects the shell. These fish are 8 to 10 inches long, but full grown shells were also found in fish half this size, when the relation between the fish and shell was trully alarming. Since the little fish actually swallow pointed shells measuring a fifth of their own length and pass them out through the vent after digesting the animal, we must credit them with a remarkable capacity for adapting their diet to circumstances.

Santa Anna Island is a very interesting one to a naturalist. Many endemic animals have been found on this tiny island including birds, snails and insects. Even the natives and the Kuper family are remarkable. There are two native villages on opposite sides of the island. One village is Christianized and the other is heathen. The old tribal customs and ceremonies are still practiced and most of the females still go about stark naked except for large ear plugs and a bone in the nose. Alvara Mendana, discoverer of the Solomons landed on this island just in front of the Kuper bungalo according to the legends of the natives. When I was there in Jan. 1930 the oldest boy, Geoffrey was about 11 years old. There are no schools in the Solomons. Mr. Kuper educated his native wife and children himself with the result that Geoffrey was later sent to Suva and then to Sydney where he graduated from the university as the most outstanding medical scholar of the year 1940. Last summer, my old partner, Bill Coultas who is a lieutenant commander wrote to me that the Kuper boy has made a great name for himself as a doctor in our armed forces.

When Henry Kuper married his native wife many of the people on the adjacent island of San Cristoval were still cannibals. He was an eye witness of the murder and feast of the two luckless wives of Arissimai, the notorious cannibal head-hunter after his escape from his enemies.

The Kiper family were very intelligent and well mannered. It often amused me to see how punctual and disciplined to parental duty were the three boys. Every night at exactly 8 o'clock they would march up three abreast to their father and salute him, shake hands with the guests and march off to bed. There were never any arguments and when told to do something it was done right away. I have seldom seen greater respect and affection shown by children to their parents than by these fine half caste boys.

On the Santa Anna island beaches I collected several hundred species of shells including about 30 species of Cypraeidae. Mr. Kuper had two large perfect orange cowries that had been cast up on the beach in front of his house several years before. In a small stream in the interior of the island a few specimens were found of the endemic *Neritina sancta-annae* E.A. Smith. The following land snails were also collected.

Leptopoma vitreum Lesson.
Trochomorpha Sancta-Anna E.A. Smith
Trochomorpha zenobia Pfeiffer
Helicina spinifera Pfeiffer
Palaeohelicina moquiniana Recluz
Sulphurina solomonensis E.A. Smith
Chloritis eustoma Pfeiffer.
Omphalotropis nebulosa Pfeiffer.
Melampus fasciatus Deshayes
Papuina (Crystallopsis) tricolor tricolor Pfeiffer
Papuina (Crystallopsis) tricolor Sancta-Annae I. Rensch
Placostylus miltocheilus miltocheilus Reeve.
Placostylus miltocheilus stramineus Brazier
Placostylus miltocheilus albolabris Brazier.

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" The Raft Book" by Harold Gatty, published by the George Grady Press, 445 West 41st St., New York, N.Y. " Lore of the Sea and Sky" is the title of this very interesting book with set of charts, protractor etc. This is the book that is placed in all of the life rafts of the armed forces and has been reviewed very frequently. The naturalist will find it excellent and it certainly is deserving of a place in every nature library. The figures of the birds in flight are really good.

MINUTES OF THE LONG BEACH SHELL CLUB

The Long Beach Shell Club met on Feb. 13 at 2:30 P.M. in the Childrens Room of the Long Beach Public Library. There were thirty six members and guests present.

This is a very fine place to meet, quietand comfortable. It is now the permanent meeting place at 2:30 P.M. the second sunday afternoon of each month.

Mr. Ralph Bormann, the president, called the meeting to order and explained that Mr. Charles Allen, one of the speakers of the afternoon had been called to an important defense meeting and could not speak.

John Q. Burch gave the report of the Nomenclature and Publications Committee. He discussed The Raft Book, Johnsonia, and a number of other recent publications.

Mrs. C.A. Lehman announced that she is now associated with the Lakewood Village Junior High School and has organized some very active nature study groups. Members were requested to give duplicate material for use by the new study groups. Mr. E.P. Chace promptly donated a box of very nice material to the cause.

Mr. E.P. Baker had for exhibition a specimen of *Zirfaea pilsbryi* Lowe that was as large or larger than any of the members present had ever seen. An interesting thing about Mr. Bakers specimen was that he took it from the hard shale along with a specimen of *Platyodon cancellatus* Conrad and the Zirfaea had worn the shell of the Platyodon entirely through to the animal. Both of them were living when taken. This proof of the rasping of Zirfaea was very interesting.

Mr. Baker also reported that those wishing to enjoy the collecting on the long reef at Anaheim Landing had better be taking advantage of the present set of tides because the government starts the actual work of dredging out the entrance on March 16. This leaves very little time to enjoy one of our best known collecting spots to be forever destroyed.

One new member was accepted- *Miss Cynthia Mason*, 130 West 10th St., Long Beach. Phone 717-36.

The meeting was then turned over to Mrs. E.P. Chace who talked on West Coast Chitons.

Grace Stillwell, Secretary.

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Notes on West Coast Chitons

by Mrs. E.P. Chace

This coast or more accurately the western shore of North America is generally considered as the metropolis of the Chitons, having about 150 species, with the Australian- New Zealand district as the next richest.

Our Chitons are assigned to seven families, seventeen genera, many of which are subdivided into seemingly endless sections. The classification os Chitons as used at present does not seem to satisfy the various authorities but to date they have not agreed upon a better one. Dr. Thiele has proposed one based on radulae. Mr. Thomas Iredale has suggested numerous changes but I have not had his papers. The classification used in Bulletin 112, which I have used with some few deviations, is that proposed by Tryon in 1892. It is based mainly upon the characters of the articulating surfaces of the valves, but also takes into consideration the development of the gills, difference in the girdle and foot, and for the first time made use of sense organs in the shell.

Now for a few of the terms used in describing chitons. We begin with the girdle, sometimes referred to as the mantle- the leathery band into which the valves are inserted. The eight pieces of the shell are called the valves. The portions of the lateral edges which are covered by the girdle are called the insertion plates. The pieces which slide under the adjoining valve are the sutural laminae. The hollow or bay in the edge is the sinus, and its shape is a guide to generic position. The jugum or jugal area is the narrow V shaped portion at the top of the arch of the median valves, and the mucro is a projecting point on the central part of the tail valve. The lateral areas are triangles with their base at the girdle and their point at the center front of the valve. The space between the lateral and the jugal areas is the central or median area. The shell is in two layers, the outer one being the tegmentum, the inner the articulamentum. The term ctenidia is sometimes used for the plates or folds of the gills, and some descriptions refer to the eaves which suggest the eaves of a house.

For some years it was believed that chitons werep particularly helpful to the paleontologist because of their ' limited bathymetric range' i.e. their tendency of each species to live at one particular depth but Iredale a nd Hull have observed that their chitons move around with changes in the water temperature or leave their usual tide pools if sand drifts in too much returning when changes in the current clean out the sand. Most of the chitons are distinctly rock dwellers but one Australian genus, Stenochiton , " inhabits the roots and blades of sea grasses", our Cyanoplax lowei comes from the holdfasts of kelp and Dr. Berry records having noted Cryptochiton at times upon the sandy beaches. When dredging at Forrester Island Mr. George Willett found that certain species usually came up on rocks and others were more commonly found on shells. Another point that interests me about chitons is the fact that certain other species are commensal with our larger Ischnochitons. So far as I know Serridens oblonga Carp. is never found except in association with these chitons, usually in the gills of Ischnochiton conspicuus, but occasionally on the girdle and also on I. magdalensis Hinds in similar positions, and Vitrinella oldroydi is usually on the tail valves of these two chitons or in the sand found in the bottom of a hole where the chitons have been living.

Taking up the systematic arrangement of our west coast chitons we begin with the family Lepidopleuridae which one group of students considers the most primitive of present day chitons, another thinks them degenerating- at any rate they are now among the least highly organized chitons. Lepidopleuridae usually lack insertion plates and where present are unslit. The best field marks of the genus Lepidopleurus are (1) the dark red foot and (2) the triangular flaps of the girdle which give a characteristic outline in the field and dissapear in drying. The type of the genus is the Mediterranean L. cajetanus Poli which I do not have. Dr. Berry says that it is so much heavier and rougher than our local Lepidopleurids that he questions their really belonging to the same genus. The other sections of the group are Leptochiton of Gray, and Xiphiozona Berry , type Lepidopleurus heathi from Monterey.

The next genus is Oldroydia Dall 1894, type O. percrassa Dall, range Monterey to San Martin Island, Lower Calif. In this genus which I believe has but one species the valves are heavy and strongly sculptured and separated by narrow extensions of the girdle reaching to the jugum. Jugal area prominent sculptured differently from the pleural tracts and extending in front of them between the sutural laminae. Lateral areas not differentiated.

Genus Hanleya Gray 1857. , type Hanleya debilis Gray, England . Only the anterior valve has an insertion plate in this genus, and as is usual in this family it is unslit. Most of the Hanleya are northern but one is recorded from deep water in the Gulf of Mexico, Hanleya hanleyi- ranges from Bering Strait to Monterey and is recorded from the Atlantic. Dr. Berry described a subspecies as H, spicata.

The second family is the Lepidochitonidae.

(This papwr will be continued in our next issue)

Two fine issues of Johnsonia have been received :
" The Genera Gaza and Livona in the Western Atlantic" by W.J. Clench and R.T. Abbott. Number 12, Dec. 31, 1943- 12 pages.
" The Genus Diodora in the Western Atlantic" by Isabel Perez Farfante. Number 11, Dec. 29, 1943- 20 pages.

" Helicid Snails in California" by Earle T. Gammon from The Bulletin , Department of Agriculture, State of California- Vol. XXXII, July-August-September 1943- No.3.
This is a very interesting paper on the introduced snail pests and their control- 13 pages. We have now learned what happened to that large snail colony at Playa del Rey.

" Revision of the Giant West Coast Land Slugs of the Genus Ariolimax Morch " by Albert R. Mead in The American Midland Naturalist, Vol. 30, No. 3, November,1943, pp. 675-717, pls. 1-4.

This is an interesting and valuable contribution to the malacology of the genus based on " an intensive study of over 700 specimens ...", which has developed the fact that occasional anatomical freaks may be found (like the girl with the upside-down stomach). There is a thorough account of the supposedly aphallate genus Aphallarion that proves to be spurious. Mead says that A. columbianus extends down as far as the San Francisco Bay region to Alameda and San Mateo counties. A.C. stramineus Hemphill is established as a good subspecies on anatomical grounds and is found in Monterey,San Luis Obispo,Santa Barbara and Ventura Counties and on Santa Cruz Island (the type locality), and Santa Rosa Island.

A dolichophallus is described as new from " Coastal Central California from northern Santa Cruz and western Santa Clara Counties south to Salinas Valley". The type locality is Saratoga,Santa Clara County.

A. californicus Cooper is also established on anatomical grounds as well as others and is said to be " Limited to San Mateo and northwestern Santa Clara Counties". A new subspecies A. c. brachyphallus is described from the single locality at Mt. Davidson, San Francisco."

(We are indebted for the above review to Mr. Allyn G. Smith, Berkeley, Calif.)

The Journal of Conchology, Vol. 22, No. 3, Dec. 29, 1943 has been received. Among other interesting papers the following should be mentioned. A continuation of the fine work on " Notes on a List of the British Non-Marine Mollusca" by Hugh Watson. " New Species of Charitodoron" by J.R. Le B. Tomlin. " Occurance of Ashfordia Granulata (Alder) in Co. Dublin" by A. Comfort.

Proceedings of the Malacological Society of London, Vol. 25, parts 5 & 6, Dec. 16, 1943 has been received. This issue contains an exhaustive paper of 37 pages and 24 pages of plates on " The English Upper Lias and Inferior Oolite species of Lima" by L.R. Cox; " English Eocene and Oligocene Chitons" by A. Wrigley; "A further note on experiments on self-fertilization in Anodonta cygnea (L.) " by H.H. Bloomer.

Dr. H.A. Pilsbry is returning to Philadelphia from Lantana, Florida and we western collectors will find the following note of interest " I am still interested in west coast shells, especially chitons, tho work on my land shell book has fully occupied my time for some years. I hope to finish up a paper on Lowe's and other west Mexican chitons, as soon as I get my final land shell volume out, this coming spring."

We have a prospective new member in the announcement of the birth of Charles Robert Wright Jr.. Congratulations to the proud parents Charles and Helen Wright.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 33-p 1
March 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held March 26, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.
Phone 6957.

Earle T. Gammon, Associate Economic Entomologist, State of California, Dept. of Agriculture, State Office Bldg. No. 1, Sacramento, Calif. " I wish to thank you for the very interesting copies of the Minutes of the Conchological Club of Southern California which you very kindly sent me. Of particular interest were your comments on my article " Helicid Snails in California" appearing in our Department Bulletin.

The Department is very anxious to develop information regarding the various colonies of introduced snails found in California. We have long been at a loss to account for the Playa del Rey colony of these snails. Any information you could give us regarding this colony, or in fact any such colony in the state, would be greatly appreciated. Data as to date of intriduction and origin is of special importance as we could then correlate the time and density and so develop our knowledge of the behavior of these snails. "

G. Clifford Carl, Director, Office of Provincial Museum, Victoria, B.C., Canada. " Please find inclosed a money order for $1.00 as a subscription to the Conchological Club of Southern California to help defray postage in connection with the " Minutes" which you have kindly been sending in for some time. Although there is no one here who is at present actively interested in Conchology we value your publication and wish to continue receiving it.

Those of your members who may have had correspondence or more personal contacts with Mr. A.W. Hanham of Duncan will be sorry to hear that he passed away on January 18th, 1944. Although he had not been actively collecting or exchanging for some years he has a large collection of shells, mainly of North America, and and equally large insect collection, numbering over 30000 specimens, His loss will be felt in many fields of natural history."

We have many fine specimens in our cabinets bearing the labels of Mr. Hanham and we are sincerely grieved to hear of the death of our old friend.

Dr. Fritz Haas, Chicago Museum of Natural History, Roosevelt Road and Field Drive, Chicago 5, Illinois. " In the February Minutes of the Conchological Club of Southern California I see that I am listed among the club's " Associate Membersand Friends". Let me tell you how much I appreciate to be thus associated to you and how proud I am of the honor bestowed on me."

Mr. and Mrs. A.W. Gillis, 70 El Nido Ave., Pasadena 8, Calif. " Coming to s shell club seems to be an impossibility, but we often think with pleasure of the members and wish the beach was nearer the mountains. If it keeps on raining much longer it may be. "

Mrs. Mildred Pattison, 311 Gertrude Ave., Redondo Beach, Telephone 3054.
" Am especially interested in Pacific Coast Shells".

Cpl. F.M. Bayer, Headquarters, Headquarters Sqdn., 77th Service Group, Robins Field, Georgia ." I think I owe you an apology for neglecting to write so long. How is Tom, where is he and what ? I have got entirely out of touch with most scientific endeavor. The army is not the best place in the world to conduct research. I had many problems hanging fire, but it looks as if they are permanently suspended. Do you ever hear from, or see, Homer Geib ? I once had his address, but lost it in the confusion. I presume you have seen the latest (Jan.) Nautilus. In the notes and news , Rehder describes Conus verrucossus vanhyningi. It is the pink verrucossus from Pompano, or more accurately, Hillsborough Reef. If I'm not mistaken, I sent it to you as C. echinulatus Kiener, and you may have got it from Royce as C. roosevelti for they are the same. There is a boy in the Sarasota Air Base who worked with you and Tom. I missed seeing him and cant figure out who it was. Do you know? Let me hear from you. Ted Bayer."

These minutes have been going to Ted at Riviera, Florida but assume he has been missing them. Thanks for the data on the Conus which we have under the two names.

Mr. and Mrs. J.M. Grech, 29, Sda. Dietro S. Ubaldesca, Paula-Malta. We are very happy to have the nice letter and Christmas greetings from Malta not to mention the beautiful piece of Malta lace inclosed as what our friend calls in his letter a " small souvenir".

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The Nautilus, Vol. 57, No. 3, January, 1944 has been received. We found the first paper in this issue of great interest. " Californian Olivellas" by D.S. and E.W. Gifford. This eight page article shows some of the results of the intensive study made of this group by our members, the Giffords. Since nearly all of us are subscribers to the Nautilus further comment on the many fine articles in this issue are unnecessary.

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Eastern Pacific Expeditions of the New York Zoological Society. XXXII. Mollusks from the West Coast of Mexico and Central America. Part II. from Zoologida, New York Zoological Society, Vol. XXVIII (Part 3), Dec. 6, 1943. pp 149 to 168 and 1 page of plates. by L.G. Hertlein and A.M. Strong.

This paper covers the Glycimeridae,Arcidae, and Pinnidae. We were fortunate to hear a personal review of this paper by one of the authors, Mr. A M. Strong, at our February meeting. All students of the fauna of this coast will, of course, consider this series indispensible to their libraries.

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Mr. S.G. Skinner, 630 Almond Ave., Long Beach 4, Calif. sends us a little verse. While we have no regular poetry department, this one deals with our interest and the moral is quite obvious.

THE BIG FISH EAT THE LITTLE ONES

" Consider the minnow, he lasts but a day,
And then an anchovy takes him away
The anchovy's happy, cavorts for a minute,
Along comes a mackerel, and then he is in it;
The mackerel will later, or probably sooner,
Be just a meal for a high-leaping tuna.
The law of the ocean from Nome to Bermuda,
Is dogfish eat catfish, then dodge barracuda.
The law of the land seems based on a notion
That's too much akin to the law of the ocean."

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The current Bulletin of the Natural History Museum of San Diego casually mentions the following recent additions to the society's scientific collections ; 307 birds,38 mammals,91 sets of birds eggs, 198 reptiles, 850 insects, 64 pressed plants, 919 mollusks, 257 fossils etc. as well as 2500 books and periodicals.

Notes on West Coast Chitons

by Mrs. E.P. Chace (continued)

Genus Lepidochitona Gray 1821- The type is the circumboreal L. marmorea Fabr. which is described as having the mantle margin covered with minute granule like round smooth scales, not imbricate. The sections under Lepidochitona are: Lepidochiton ss. Tonicella, of which L. lineata is the most familiar species. Cyanoplax of which L. hartwegii is the most common, L. lowei the more interesting. Spongioradsia from the western Aleutian Islands.

Genus Nuttallina Carpenter 1873- The type is N. scabra Reeve which equals N. fluxa Carpenter. Shell very elongate, valves projecting anteriorly, girdle very spinose. Resembles the Australian genus Acanthopleura.

Genus Schizoplax Dall 1878- The type is S. brandtii Middendorff " like Tonicella but the valves have a median slit.

The next family, the Ischnochitonidae, is large and much divided.

Genus Ischnochiton Gray 1847- The insertion plates are sharp and slit- the teeth not buttressed. The girdle is covered with imbricating scales. The gills typically extend the whole length of the foot but in some species they are short in front or at both ends. The genus is found not only here and in Japan but is also recorded from western South America, New Zealand, Australia, South Africa and the West Indies. The most convenient example of Ischnochiton s.s. is I. radians Carpenter. which we have from Crescent City. I. mertensii is the type of sec. Lepidozona and I. cooperi, californiensis (formerly called clathratus or the southern pectihulatus) and asthenes belong to it. Rhombochiton Berry 1919 has as its type I. regularis. It is based on the fact that the radula of I. regularis resembles both Lepidozona and Callistochiton, another example of the necessity of judging a shell by the sum of its characters. Tripoplax is a section that inclufes species recorded from north of Puget Sound. Our large I. conspicua and magdalensis belong to sec. Stenoradsia. I. fallax Carp. belongs to subgenus Stenoplax.

Genus Chaetopleura Shuttleworth 1853- The type is C. peruvianus Lam.- has a hairy girdle and gills extending almost or quite to the front end of the foot. Our Chaetopleuras of which C. gemmea Carp. is the commonest are small, a little longer than an inch in length. Bulletin 112 gives sec. Dendrochiton Berry under genus Chaetopleura. I have not been able to find where or why Dall transferred this from the family Mopaliidae under which Berry placed it. The few specimens we have had seem Mopaloid in appearance and habit.

Genus Pallochiton Dall 1878- The type is P. languinosus Carp. This genus closely resembles Chaetopleura in sculpture as wellas structural characters, and the girdle is decidedly like Chaetopleura being very sparsely hairy or smooth, and lacking all appearance of pores, but the type species is distinctly larger than our Chaetopleura. P. languinosus is reported from San Diego but our specimens are from Ensenada.

In Berry's Monograph of the Fossil Chitons of Western North America he set up Callistochitoninae as a sub-family under Ischnochitonidae. In Iredale and Hull Monograph on Australian Loricates they say family Callistochitonidae, so however you see fit to label your shells you will have company. In this group the valves are conspicuously sculptured, the insertion plates are short, smooth or nearly so, curved outward at the ribs and slit there. The slits corresponding in position to the ribs on the outer surface. Girdle poreless, densely clothed with minute striated or smooth scales. The type C. pulchellus Gray. The genus is reported from Australia, Red Sea, and Gulf of Mexico as well as the coast of Japan and western North America.

The family Chitonidae is listed from our fauna but seems to be more southern. The genus Tonicia has a girdle spoken of as smooth or downy and the gills go completely around the foot. The type is C. elegans Fremb. and our only species is T. pustulifera Dall. While reported from San Pedro, I have never seen it.

We next take up the large and confusing group of the Mopaliidae. We have but 4 genera here: Mopalia Gray 1847- type C. blainvillei Brod. Most quickly identified in the field by their width and the wide bristly girdle- northern Pacific, Japan, Lower California. Basiliochiton Berry - type M. heathi from Monterey. Dendrochiton Berry- type D. thamnophora- conspicuous sutural tufts of bristles characterize both these genera and they are sometimes considered sub-genera. Placiphorella Carpenter 1878 is a Mopalia easily identified by the long 'veil' into which the girdle is produced. There are 4 species known in the north and only one recorded here, the type species, P. velata Carp. It is interesting to know that Carpenter's type came from Todos Santos Bay.

The family Acanthochitonidae is based particularly on the insertion plates. The girdle is never scaly but may be smooth or hairy. The tegmentum of the shell is much smaller than the articulamentum. We have two genera - Acanthochitona Gray - type A. fascicularis Linne, in which the hairy girdle is marked by distinct bundles of fine spines or hairs looking like spun glass. There have been 2 species described here- A. avicula Carp. 1866 and A. diegoensis Pilsbry 1893/ It is now believed that A. avicula was the young and A. diegoensis the adult of the same species and that Pilsbry's name should be dropped. The other genus Katharina Gray 1847- has but one species and exemplifies the smooth girdle and the extremely small tegmentum mentioned in the family description. Bulletin 112 records Katharina tunicata Wood as coming south to Catalina Island but I have not seen it from this region.

One more chiton and we are through, but distinctly not the least. The family Cryptochitonidae - Genus Cryptochiton Gray 1847- type C. stelleri Middendorff. The name means 'hidden' and the valves are entirely concealed by the red mantle which bears closely spaced fine spicules- range Japan, Alaska south to San Miguel and San Nicolas Islands. There is another genus in the family that sounds as if the shell might be half way between Cryptochiton and Katharina as Amicula has a small round spot exposed on each valve but it does not come south of Alaska as a rule. There is an old report of it from the Farallones.

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E.C. Doremus, 227 Holmes St., Boonton, N.J. Thanks for the donation to our fund. " I had intended writing to ask if you could send me the name of a collector from whom I might purchase western U.S. land shells, also any Australian, New Zealand, or South American collectors who have shells for sale."

Miss Alice L. Waterbury, 2235 Norwalk Ave., Los Angeles- " I am glad to have a list of the members of the club. Many thanks for past favors."

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Dr. Paul Bartsch- in a recent letter sent a note about methods of cleaning Bittium. " May I offer a suggestion to you about cleaning specimens of this kind which I have been employing for almost half a century, namely, putting them in a jar or flask or tube and adding large quantities of table salt, then partially filling the tube with water and shaking the mixture of shells, salt and water. Of course, there must be a supersaturated solution so that you will have ample undissolved salt crystals in your mixture. Shaking vigorously will remove the dirt from the shells then washing out the salt by repeated changes of water you will find that the fine salt crystals will have abraded the dirt and leave the shells in the pink of condition without damage to them."

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W.E. Griffiths, 24 (Aster) melita Street,Sliema,Malta. " Out here we are now passing a peaceful time, no air raids, and absolute quiet, although of course it will be a long time before we turn to normal again. Food is now plentiful, and we can now write and say how near starvation we were about Nov. 1942" Mr. Griffiths writes that he is again unpacking his shell collection which suffered no damage from enemy action.

PROGRAM FOR 1944

The program of the Conchological Club of Southern California for the year 1944 will be devoted to a systematic, geographical, and ecological study of west American marine mollusks, based upon Dr. Dall's Bulletin 112. It is planned to consider the families, their genera and species, with the idea of gathering all possible information regarding their taxonomy, distribution and ecology, additional or emendatory to that given in Bulletin 112 . It is hoped that when this program is completed (probably in 2 or 3 years), there will be on record enough new data on the mollusks of this region to warrant publication of a new check list.

In carrying out this program, the discussion of certain families and genera will be assigned to various members of the club. It is suggested that such discussion be limited, so far as possible, to the area under consideration, and that it consist mainly of concise definitions of the higher groups (above species), their distribution and ecology, and their relationships to allied groups. The discussion of the species, themselves, will be a general one by all the membership of the club. Members should familiarize themselves with the topic to be discussed at each meeting, and should bring or send to the meeting any unusual data or specimens pertinent to such topic.

February-	Solemyidae- Solemya	John Q. Burch
	Nuculidae- Nucula, Acila	"
	Nuculanidae-	George Willett
March	Arcidae- Glycimeris	E.P. Baker
	Limopsis	"
	-Arca	"
	Pinnidae- Atrina	"
	Pteriidae- Pteria, Pedalion	"
	Philobryidae- Philobrya	Mrs. Effie M. Clark
	Ostreidae- Ostrea- Dimya	"
April	Pectinidae- Pecten	Dr. Howard R. Hill
	Limidae- Lima	Miss Edna T. Cook
	Anomiidae- Anomia-Pododesmus	"
May	Mytilidae- Mytilus,Septifer,Modiolus,	Mrs. Elsie M. Chace
	Botula	"
	Dacrydium,Lithophaga,	Mrs. Faye B. Howard
	Modiolaria, Crenella	"
June	Periplomatidae- Periploma	Mrs. Jean Wilkins
	Thracidae- Thracia,Cyathodonta	"
	Pandoridae- Pandora	"
	Lyonsiidae- Lyonsia,Mytilimeria	Dr. W.O. Gregg
	Poromyacidae- Poromya,Cetoconcha	"
July	Lyonsiellidae- Lyonsiella	E.J. Post
	Cuspidariidae- Cuspidaria,Myonera,Leiomya	"
	Verticordiidae- Verticordia	"
	Astartidae- Astarte,Bernardina	Mrs. E.P. Baker
	Crassatellitidae- Crassatellites,	"
	Crassinella	"
August	Carditidae-Glans,Cardita,Calyptogena	A.M. Strong
	Milneria	"
	Chamidae- Chama, Pseudochama	Ledona Keppen
September	Thyasiridae- Thyasira,Axinopsis	Don Smith
	Diplodontidae- Diplodonta	"
	Lucinidae- Lucina, Divaricella	"
October	Erycinidae- Erycina,Kellia,Aligena	Charles Allen
	Rochefortia, Serridens	"
	Pseudopythina,Bornea,Lepton,Lasaea,	"
	Turtonia,Sportella,Anisodonta	"
	Chlamydoconchidae-Chlamydoconcha	"

November	Cardiidae- Cardium,Serripes,Protocardia	E.P. Chace
	Vesicomyacidae- Vesicomya	"
December	Veneridae- Dosinia,Tivela,Transenella, Amiantis, Pitaria,Antigona,Saxidomus,Chione, Venus, Humilaria,Compsomyax.	
January, 1945	Veneridae (con.) Protothaca (Paphia) Liocyma,Venerupis,Gemma,Psephidia	
	Petricolidae- Petricola	Mrs. Mary Cornett
	Cooperellidae- Cooperella	"

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Minutes of the February Meeting- 1944

Called to order by the president, Elsie M. Chace, the Conchological Club of Southern California held their February meeting at 2:30 , the 27th, 1944, in the usual place at the Los Angeles Museum. 21 members were present and four visitors: Lillian De Poole, 1369½ Esmeralda St.,Carolyn Bremer, 3212 Chadwick, Dr. Lois Ely, 1641 Purdue, West Los Angeles, and H.E. Davidson, 4585 Catalina St., Los Angeles. We were glad to see again three members who have been absent for some time, Faye and Jerry Howard, and A.M. Strong.

Reports were made by members of the nomenclature committee which will be summarized elsewhere, as will be the outlines of the new series of studies of west coast shells which was initiated at this meeting.

John Burch gave the first paper taking the Solenomyacea, and was followed by George Willett discussing the Nuculacea. There was an abundance of illusptrative material and the discussion was very interesting.

Another generous sized box of shells was donated to the club members by Dr. Calvin Goodrich of Ann Arbor, Mich. and after the meeting was adjourned the members spenttheir time till the closing of the museum for the day, enjoy--ing and dividing the gift. Only a part was given out for lack of time to care for it and the remainder will be available at the next club meeting- many species of the genus Clausilia from many parts of Europe.

Effie M. Clark- Secretary.

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Professor T.D.A. Cockerell, Box 411, Palm Springs, Calif. Professor and Mrs. Cockerell are now in charge of the Desert Museum. We are in receipt of a book review by Professor Cockerell, a seven page separate from the Journal pf the New York Entomological Soc., Vol. Li, Dec. 1943 in which he discusses " Systematics and the Origin of Species from the Viewpoint of a Zoologist" by Ernst Mayr. New York, Columbia University Press, 1942. 334 pp. $4.00.

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F.C. Hadden, 2623 Pamoa Rd., Honolulu, Hawaii- Mr. Hadden is a friend of our good member, Don Smith, and has asked that his name be added to our mailing list.

Mr. A. Sorensen, Pacific Grove, Calif. Mr. Sorensen has been ill and we are very glad to hear from a letter he has just written our secretary, Mrs. Effie M. Clark that he is improving slowly.

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We wish to thank the following for their generous donations to our minutes fund : Frank Lyman, Lantana, Florida ; Lucy Nulton, Greenville, North Carolina; Professor Louis Brand, University of Cincinnati, Cincinnati, Ohio; Edgerton B. Sprague, Santa Ana, Calif. ; E.C. Doremus, Boonton, New Jersey; Mrs. Faye Horard, Inglewood, Calif.; Mr. F.C. Hadden, Honolulu, Hawaii.

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CHECK LIST

WEST NORTH AMERICAN MARINE MOLLUSCA FROM SAN DIEGO, CALIF. TO ALASKA

This list will follow the arrangement of W.H. Dall in his Summary of Species, Bulletin 112, United States National Museum.

Species on which the members of the club have no additional information will merely be listed.

Class- Pelecypoda

Family- Solemyidae (Solemyacidae)

Genus- Solemya Lamarck, 1818 (Solenimya Lamarck 1822, Solenomya Lamarck 1830, Stephanopsus Scacchi 1833).

Type- Solemya togata (Poli)- Mediterranean

Subgenus- Acharax Dall 1908.

Solemya agassizii Dall 1908- " Off Tillamook Bay, Oregon, south to Aguja Point, Peru, in 1036-1800 fathoms".

Solemya johnsoni Dall 1891- " Puget Sound to Panama"

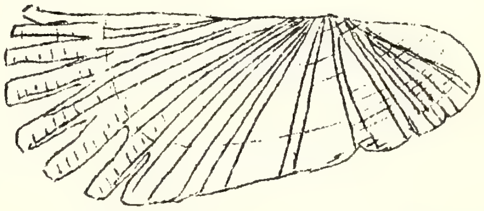
Subgenus Petrasma Dall 1908

Solemya panamensis Dall 1908- " Santa Barbara, Calif. to Panama" and here extended to Monterey, Calif.

Dredged in 25 fathoms off Avalon, Catalina Island (8/1937) and fairly common off Redondo Beach from 15 to 50 fathoms on mud bottom (1937-1941)(Burch) San Jose Island, Gulf of Calif. (H.N. Lowe 1931); 9 fathoms in coarse arkose sand, off Pacific Grove, Calif. rare (Gordon); Catalina Id., 100 fathoms ((adult), 4 fathoms, mud (juvenile) (G. Willett); Malaga Cove, L.A. Co., Cal. 15 fms. (juvenile) and Point Loma, San Diego Co., 30 fms. (juvenile) (Willett)

Solemya valvulus Carpenter 1864- " San Pedro, Calif. to Gulf of Calif." and off Monterey, Calif.

Off Monterey, Calif. in 10-25 fms. sand, rare (A. Smith); off Newport Bay, Calif. (H.N. Lowe); Scammon's Lagoon, Lower Calif. (Hemphill).



Solemya

Family- Nuculidae

Genus- Nucula Lamarck 1799

Type- Arca nucleus Linnaeus- Europe

Subgenus Nucula

Nucula exigua Sowerby - " Golden Gate to Acapulco, Mexico"- Hertlein and Strong give the range " San Bartolome Bay (Turtle Bay), Lower Calif., and Gulf of California to Ecuador (?) Magellanic region (Dall)."

Dredged in 20 fathoms off Malaga Cove, L.A. Co., Calif. 11/1937 and very abundant in the Baldwin Hills Pleistocene Playa del Rey deposit (Burch); in 18 ftms. off South Coronado Island (Dr. Fred Baker); Malaga Cove in 10-15 fms. (G. Willett); Scammons Lagoon, L.C. (Hemphill); Santa Maria Bay, L.C. H.N. Lowe 1931); Pleistocene from Lido Isle, Newport Bay, Anomia Bed, Vermont & Sepulveda, Gaffey St. Bridge, San Pedro, Lumber Yard, San Pedro, & Nigger Slough (Miss E. Cook).

Subgenus Ennucula Iredale 1931

Nucula cardara Dall 1916- " Monterey, Calif. to Lower Calif. in deep water." In 43-108 fms. in soft green or dark mud (U.S.F.C.) Stas. 4475,4482,4483,4523"

Nucula carlottensis Dall 1897- " Queen Charlotte Islands to Anacapa Island " 581 fms. in green mud and sand (U.S.F.C.) Sta. 3670, rare.

Nucula darella Dall 1916- " Off San Diego,Calif. in 822 fms."
Nucula linki Dall 1916- " Queen Charlotte Sound, British Columbia, to Guaymas, Mexico".

Dredged off Redondo Beach, Calif. in 75 fathoms, mud bottom, 8/41(Burch); Tillamook, Oregon (H.N. Lowe); 51 fms. in soft dark gray mud (U.S.F.C.) Sta. 4464.

Nucula petriola Dall 1916- (See **Cyrilla A. Adams** under Fam. Nuculanidae)
Nucula quirica Dall 1916- " Chugachik Bay , Cooks Inlet, Alaska"

We have a note from Dr. Myra Keen that this species equals Nucula bellottii Adams fide Schenck, 1939, p 31.

Nucula tenuis Montagu,1808- Hertlein & Strong give range " Northern Europe, Northeastern North America. Circumboreal. Point Barrow,Alaska to Cedros Id., Lower Calif."

Dredged in 25 ftms. off Avalon,Catalina Id.,8/1937, in 40 ftms. off Monterey,Calif. 8/1937-40, in 40 fms. off Rocky Pt.,L.A. Co. 7/1938, in 25 fms . 50 to 100 fms. off Redondo Beach, Calif. 1937-41, in 50 fms. off Ensenada,Mex 7/1938- always from mud bottoms (Burch). Many specimens dredged in the inner harbor at San Pedro about 1910 (Tremper) (Strong); Craig,Alaska, 15-30 fms ;, San Pedro, 20 fms., Catalina Id., Newport, Point Loma, Calif. in 30 fms. (Geo. Willett); San Juan Id., Puget Sound (H.N. Lowe); Departure Bay, British Col ., (Mrs. Oldroyd); in 15-149 fms. in mud,sand and clay, common off Monterey, Calif. (A. Smith); Akutan Id. dreged 15 fms. mud, 1934 (Norberg); Hinchinbrook I., Pr. Wm. Snd.,Alaska, 15 fms. 1936 (Norberg); Tromso,Norway, drgd . in 1930 (Norberg); Knight Island,Drier Bay,Alaska, 1923 (W.J. Eyerdam).

Nucula tenuis expansa Reeve,1855- " Arctic Ocean to Sitka,Alaska; San Diego ?"

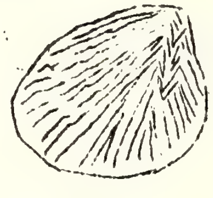
We have a note from Dr. Myra Keen that this species equals Nucula bellottii A. Adams fide Schenck ,1939. Doubtful if the true N. bellottii occurs south of Alaska. The name " expansa" is both a synonym and a homonym."

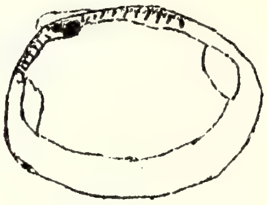
Punuk Island, Bering Sea, 15 ftms. (Lewis) (Willett); arctic (H.N. Lowe Akutan Island, dredged 10 ftms. 1934 (Norberg); Izhut Bay, Afognak Id., dredged in mud, 1922 (W.J. Eyerdam)

Subgenus Nuculopsis Woodring 1925. Hertlein and Strong describe species under this subgenus, but insofar as we know now it is not known north of San Diego.
Genus Acila H. & A. Adams, 1858-
Type- Nucula divaricata Hinds - China Sea
Subgenus Truncacila Schenck in Grant & Gale 1931.
Acila castrensis Hinds 1843- Hertlein and Strong give the range " Sitka, Alaska, to Cedros Island, Lower Calif., 40 to 262 fathoms"

Dredged in such abundance as to make it the predominant mollusk in mud off Redondo Beach from 50 to 75 fms. 1937-41; 50 fms. off Ensenada,Mex. 7/1938; abundant in the Pleistocene of Timm's Pt.,San Pedro,Calif. (Burch); 20 fms. mud Friday Harbor, Wash. 5/1936 (W.J. Eyerdam); off Upright Head, San Juan Islands, Wash. on shell bottom (Ruth Coats); Craig, Alaska, 15-40 fms.; Forrester Id., Alaska, 50 fms.; San Pedro,Calif. 15-20 fms. (G. Willett); Pleistocene from 3rd & Mesa, 8th & Palisades, Timm's Pt., & Walteria (Miss E. Cook.).

The following works should be consulted on these groups :
Hertlein & Strong"Mollusks from the West Coast of Mexico & Central America" Part I, Zoologica,Vol.XXV.
"Nuculid Bivalves of the Genus Acila" by H.G. Schenck, Geol. Soc. of Amer. Special Papers No. 4, 1936.


Acila


Nucula

Family Nuculanidae (Ledidae)

Like Nucula, but posterior and elongate, rostrate; pallial line sinuate; end of shell sometimes partly gaping.

Genus Nuculana Link 1807 (Leda Schumacher 1817)

Type- Arca rostrata Chemnitz-- Mya pernula Muller- Northern coasts of Europe.

Subgenus Nuculana s.s.

Nuculana amblia Dall 1905- Monterey Bay, Calif.

465-1041 fathoms, in green, blue and soft gray mud, and hard sand, off Point Pinos (U.S.F.C. Stas. 3128,4516,4517,4530,4536-9) common.

Nuculana buccata Steenstrup 1842- Arctic Ocean and Bering Strait. Also Atlantic.

Nuculana conceptionis Dall- Aleutian Islands to San Diego, Calif.

298 fathoms in yellow sand and mud, off Point Sur,Calif. (U.S.F.C. Sta. 3187) one specimen; specimens in Burch collection taken off San Diego by Fred L. Button.

Nuculana fossa Baird 1863- Kotzebue Sound,Alaska to Puget Sound.

Mr. George Willett places the following in the synonomy of this species: N. f. sculpta Dall and N. f. vaginata Dall. They are here listed as in Dall.

Kodiak Island, Alaska 15 fms. (Lewis); Wrangel and Craig,Alaska,30-60 fms. (G. Willett); Knight Id., Drier Bay, dredged in 1923 (W.J. Eyerdam); Boulder Clay, Moss Pt., Victoria, B.C. , also Unalaska Id. in 75 fms. (Mrs. I.S. Oldroyd

Nuculana fossa sculpta Dall 1916- South of Alaska peninsula , 69 fms.

Nuculana fossa vaginata Dall 1916- Kasaan Bay,Alaska 50 fms.

Nuculana fossa curtulosa Dall,1916- Bering Sea and Unalaska.

Nuculana pernula Muller,1779- Arctic Ocean to Plover Bay. Also Atlantic.

Spitzbergen 70' 45"-- 20'E. of Hinlopen, 55 fms. clay,1861; W. coast of Sweden, Gullmarn, Bohuslan, 1897 (A. d' Ailly); Tromso,Norway, 8-10 fms. sandy mud 1935 (Norberg); Knight Id.,Drier Bay, dredged 1923 (W.J. Eyerdam); Akutan Id., dredged 1931 (Norberg).

Subgenus Saccella Woodring ,1925- Type Arca fragilis Chemnitz.

Nuculana (Saccella) acuta Conrad 1831- Type locality- North Carolina.

Range: Off Martha's Vineyard to the West Indies.

The following note on this species is the opinion of John Q. Burch.

With but few exceptions all west coast collections contain sets of a small species of Nuculana found common in comparatively shallow water off the coast of Southern California and have it erroneously labelled N. acuta. Many of us have sets of the true Atlantic N. acuta in our cabinets with the west coast specimens for comparative purposes. It is obvious to any amateur that the two shells could not possibly be considered to be the same species. This fact is always noted and commented upon whenever these specimens are examined, but for some reason no one has seen fit to describe it and give it a name. It is hoped that the figures below will show the differences between the two species.

Grant and Gale (Mem. San Diego Soc. Vol. 1, 1931) suggest that the species may be N. penderi Dall and Bartsch 1910. " N. acuta differs from N. penderi in its smaller size and its less dorsally curved rostrum. Dall and Bartsch, in their description of N. penderi state that the latter is less elongate than N. acuta, a relationship which is true of the Atlantic acuta, but does not hold for the shorter, less typical Pacific coast representatives of Conrad's species."

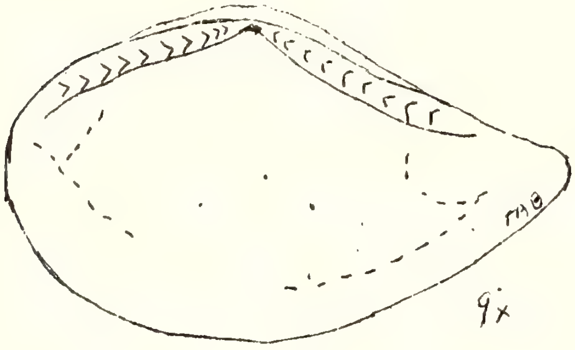
N. penderi has been well figured. Two very good figures are in Oldroyd, Stanford Univ. Publ. Geol. Vol. 1, Pl. 39, figs. 4,5.

George Willett suggests that this shell be labelled N. penderi subsp.

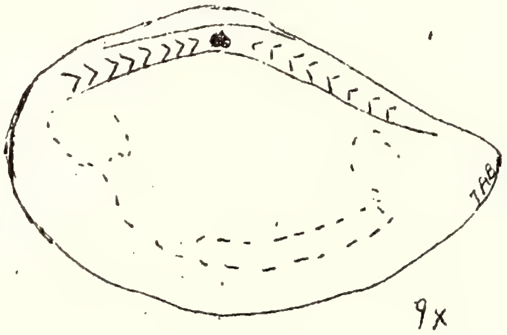
It is the opinion of the writer that this southern California species is distinct from N. penderi which is shorter and more globose.

It has been our custom when labelling shells that seem to us undescribed and are abundant off Redondo Beach, to name them after the locality. So until this species is given a better name, it will be Nuculana redondoensis in our collection.

Some collecting data on this species follows: Dredged in 25 fms. off Avalon,Catalina Island, Calif. 8/1937, abundant in gravel at 25 fms. off Redondo Beach,Calif. 1937-41, in 20 fms. off Monterey,Calif. on shale bottom, 8/1937,40 (Burch); Point Loma,Catalina Island, San Pedro, 2030 fms., sand (G. Willett).



Redondo Beach,Calif. 25 fms.

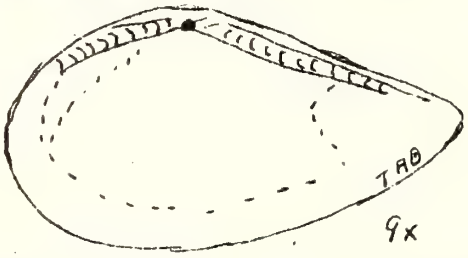


Lantana,Fla. 100 fms.

Note difference in shape of shell and center of hinge.
Tom Burch sent the following comment with the drawings, " Just finished the drawings- I believe the two figures of N. acuta show the difference clearly. I drew them first with a camera lucida and then reduced them with proportional dividers. They are all the same magnification (9x). I did not try to get the teeth accurately drawn, but the central area is as shown."
Nuculana austini (Oldroyd) 1935- West coast of Vancouver Id., Nootka Light, (Nautilus V. 49, p 13). This species is generally placed in the synonymy of N. minuta Fabricius 1776.
Nuculana cellulita Dall 1896- Puget Sound

Craig,Alaska,30-40 fms. sandy mud (George Willett); Elrington Id., Pr. Wm. Sound, dredged 1925 (W.J. Eyerdam); dredged off Friday Harbor,Wash. 4/1941 (T. Kincaid).
Nuculana " cuneata Sowerby"- Monterey (Cooper). Note by Allyn Smith. " This is not N. cuneata Sowerby which is a synonym of N. elenensis Sowerby. Early collectors applied the name to the species which Dall called N. aouta Conrad."
Nuculana oxia Dall 1916- Santa Rosa Island,Calif. to Gulf of California.

Specimens taken in great abundance off Redondo Beach in 75 to 100 fms. mud bottom 1937-41, and in 50 fms. off Ensenada,Mexico 8/1938 have been tant-atively placed in this species which has never been figured (Burch). A figure of the Redondo Beach shell follows.



Nuculana oxia Dall, 1916 Off Redondo Beach,Calif. in 75 fms. mud.

Nuculana minuta Fabricius,1776- Arctic Ocean to San Diego,Calif. Also Atlantic.

Victoria, B.C., 10-15 fms. (Lewis); Craig,Ketchikan,Forrester Id.,Alaska in 20-50 fms. (G. Willett); Catalina Island, 200 fms. (.G. Willett); Orca, Pr. Wm. Sound 1936(Norberg); Knight Id.,Drier Bay, dredged,mud,1924 (W.J. Eyerdam); Knight Id.,Thum Bay, dredged 1940 (W.J. Eyerdam).

Nuculana minuta lomaensis Dall, 1919- San Diego, Calif.

Dredged off Redondo Beach, Calif. 1937-41, 50 fms. (Burch).

Nuculana penderi Dall,1910- Forrester Id., Alaska to Santa Barbara Islands.

Craig,Alaska, 30-40 fms., sandy mud (G. Willett).

Nuculana taphria Dall,1897- Bodego Bay, Calif. to Lower California.

Dredged off Santa Monica,Calif. in 10 fms. sand 12/1935, off Monterey, Calif. in 10 fms. shale 8/1937, and exceptionally large specimens off Pacific Grove in 15 fms. sand, off Redondo Beach and San Pedro,Calif. in 15-25 fms. 1937-41,off Ensenada,Mex. in 15 fms. 7/1938, fossil in Pleistocene of Timm's Pt. and Hilltop Quarry,San Pedro,Calif. and very abundant in the Baldwin Hills deposit at Playa del Rey (Burch); dredged in 7-10 fms. off South Coronado Id (Dr. Fred Baker); Many specimens dredged in 6 fms. near Deadman's Island, by Capt. Luke in 1912 (Tremper); in 3 fms. along the inside of the Government breakwater at San Pedro (Strong); specimens were taken from lumps of clay dicharged by the dredges in the outer harbor, San Pedro (Chace). 8-51 fms. in coarse and fine sand, abundant. Common in fish stomachs off Monterey.(Sorensen)

Subgenus Thestyleda Iredale, 1929- Type- Leda ramsayi E.A. Smith

Nuculana hamata Carpenter 1864- Puget Sound to Panama Bay

Dredged in abundance off Redondo Beach in 25,50,75 and 100 fms. mud bottom, in 40 fms. off Rocky Pt., in 35 fms. off Avalon,Catalina Id., 8/1937-41, in 50 fms. off Monterey,Calif. 8/1937, abundant in the Pleistocene of Timm's Pt. San Pedro,Calif. (Burch). 35-158 fms. in mud and sand, fairly common off Monterey (A. Smith).

Nuculana hamata limata Dall,1916- Santa Barbara to San Diego,Calif.

Nuculana leonina Dall, 1916 - Straits of Fuca to latitude 36 north.

152-766 fathoms in green mud, sand and rocks, off Point Pinos (U.S.F.C. Stas. 3202,4509,4514,4517,4541), fairly common.

Hertlein and Strong in " Mollusks from the West Coast of Mexico and Central America",Part I, Zoologica, Dec. 31,1940, describe two new subgenera and use others:

Politoleda Hertlein and Strong, 1940- Type - Nucula polita Sowerby
Costelloleda Hertlein and Strong,1940- Type- Nucula costellata Sowerby
Spinula Dall, 1908- Type-Leda calcar Dall
Jupiteria Bellardi, 1875- Type- Leda concava Bronn.

So far as known these subgenera have not been taken north of San Diego.

The subgeneric position of the following species of Nuculana is uncertain:

Nuculana amiata Dall 1916- Off San Diego, in 488 fathoms.

Nuculana dalli Krause, 1885- Unalaska,Aleutian Islands. Note by Dr. A. Myra Keen " Probably a Yoldia".

Nuculana extenuata Dall, 1897- Off Sitka,Alaska, 1,569 fathoms.

Nuculana fiascona Dall, 1916- Off San Diego,Calif. in 822 fathoms.

Nuculana gomphoidea Dall, 1897- Off Tillamook,Oregon, 786 fathoms.

Nuculana liogona Dall,1916- Bering Sea in 1,401 fathoms.

Nuculana navissa Dall, 1916- Farallones Islands to San Diego,Calif.

Nuculana phenaxia Dall,1916- Off San Diego,Calif. in 822 fathoms.

Nuculana pontonia Dall,1889-Santa Barbara Ids.,Calif. to Peru.Gallapagos.

Nuculana radiata Krause,1885- Arctic Ocean; Plover Bay,E. Siberia; Okhotsk and Bering Seas.

Nuculana spargana Dall, 1916- Santa Barbara Ids., to Point Loma, Calif.

Genus Adrana H. and A. Adams, 1858. Type Nucula lanceolata Lamarck.

A number of species of this genus have been described from off Mexico and Central America, but none have been reported north of San Diego.

Genus Yoldia Moller, 1842- (Portlandia Morch, 1853)
Type- Nucula arctica Gray Circumboreal

Pallial sinus deeper than in Nuculana; shell thinner, gaping at both ends; usually with strong keel on posterior dorsal margin.

Subgenus Yoldia s.s. Flattened; elongated; no sculpture except incremental lines.

Yoldia myalis Couthouyi, 1838- Arctic Ocean to Puget Sound.

Punuk Id. and Nunivak Id., Bering Sea (Lewis); Kodiak Id.,Alaska (Lewis); Craig,Alaska, 20-40 fms. (G. Willett); Sucia Id., Puget Sound, 25 fms. (Mrs . Oldroyd); Akutan Id., dredged 10 fms. mud, 1934 (Norberg); Hinchinbrook Id. dredged 1936 (Norberg); Knight Id., Drier Bay, 25 fms. mud,1923 (W.J. Eyerdam); Unalaska Id., under stones on rocky reef at low tide,1932 (W.J. Eyerdam).

Yoldia limatula Say, 1831- Arctic Ocean to San Diego.

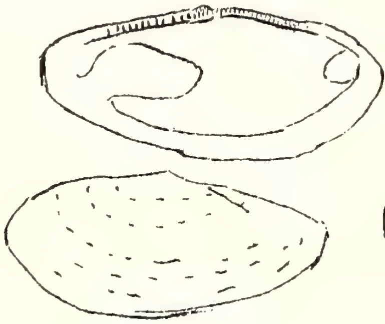
Kodiak Id., 15 fms. (Lewis); Wrangell, Alaska, 50 fms. (G. Willett); Puget Sound (U. of W.); Elrington Id.,Pr. Wm. Sound, dredged 1924 (W.Eyerdam); Sorfjord,Norway, 1935 (Norberg);

Yoldia gardneri Oldroyd, 1935 - Gardner Bay, Pender Harbor in 4 fms. (Nautilus V.49,No.1 ,p.14). Some students suggest that this is the west coast representative of Yoldia limatula Say. Others place it in the synonomy of limatula. Mr. George Willett collected a topotype which he says is narrower and more attenuated posteriorly than Y. limatula. He labels the species as,
Yoldia limatula gardneri Oldroyd, 1935.

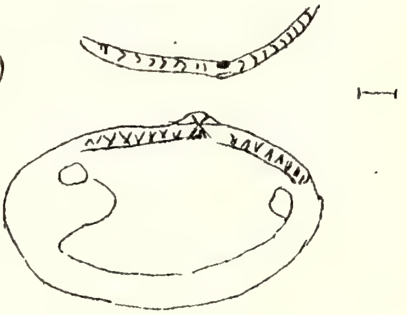
Subgenus Cnesterium Dall, 1898- Like Yoldia s.s., but with concentric sculpture not coincident with incremental lines.

Yoldia scissurata Dall,1897- Syn. Y. ensifera Dall, 1897; Y. ensifera plena Dall,1908. Arctic Ocean to San Diego, Calif.

It seems to be generally believed by students that Y. scissurata and Y. ensifera are the same species. There has been some confusion as to which is the older name. They were both described in the same publication and scissurata has page priority.



Yoldia, s.s.



Yoldia (Yoldiella)

Punuk Id. and Nunivak Id., Bering Sea, 8-12 fms. (Lewis); Craig,Alaska, 60 fms., Newport,Calif. 30 fms. (G. Willett); Puget Sound (U. of W.); Akutan Id., dredged 12 fms. mud, 1934 (Norberg); Unalaska Id., dredged 20 fms. 1932 (W.J. Eyerdam); Hinchinbrook Id., Pr. Wm. Sound, dredged 1936(Norberg); Izhut Bay, Afognak Id., dredged, mud, 1922 (W.J. Eyerdam); San Juan Id.,Puget Sound, 25 fms. (Mrs. Oldroyd); 8-51 fms. in coarse and fine sand, abundant off Monterey (A. Smith); common in fish stomachs at Pacific Grove (Sorensen); dredged in great abundance off Redondo Beach,Calif. in 50-75 fms. mud, not uncommon in the Pleistocene of Timm's Pt., San Pedro,Calif. (Burch.)

Yoldia seminuda Dall, 1871- Bering Sea to Sitka, Alaska.

One living specimen from 21 fms., in sand off Monterey,Calif.(Gordon).

Subgenus Kalayoldia Grant and Gale, 1931. Definite concentric riblets; posterior portion of shell upcurved.

Yoldia cooperi Gabb, 1865. " San Francisco Bay to San Diego". Todos Santos Bay, Lower Calif.

Dredged off Ensenada, L.C., Mex. in 15 fms. 7/4/38, Oceano, San Luis Obispo Co. 6/29/35 (Burch); 5-15 fms. in sand off Soquel, Calif. (A. Smith); many specimens dredged off Deadman's Id., San Pedro, Calif. in 6 fms. in 1912. A large number of specimens have been cast up by storms at various times along the Terminal Island front (Tremper) (Strong); La Jolla, Calif. (H.N. Lowe); many dead valves on the beach at Ocean Beach, San Diego Co. (Miss V. Bristol);

Subgenus Megayoldia Verrill and Bush, 1897- Shell swollen, blunt ended.

Yoldia thraciaeformis Storer, 1838. Arctic Ocean to Oregon; also Atlantic.

Wrangell, Alaska, 50 fms. (G. Willett); Sucia Id., Puget Sound, 35 fms. (Mrs. Oldroyd);

Yoldia secunda Dall, 1916- Southeastern Alaska in deep water.

Wrangell, Alaska, 50 fms. (G. Willett).

Yoldia beringiana Dall, 1916- Bering Sea to Anacapa Id., Calif.

152-1041 fathoms, in hard sand and blue and soft gray mud, off Point Pinos (U.S.F.C. Stas. 3128,4509,4536).

Yoldia montereyensis Dall, 1893- Chirikoff Id., Alaska to San Diego.

152-871 fathoms, in mud and sand (U.S.F.C. Stas. 3128,3202,3670,4509, 4514,4515,4517,4538,4540,4541,4542) common. Off Monterey, Calif. (A. Smith) Knight Id., Drier Bay, dredged, 1923 (W.J. Eyerdam); off Monterey, Calif. 60 fms. (H.N. Lowe); off Monterey, 25 fms. (Mrs. Oldroyd).

Yoldia martyria Dall, 1897- Prince of Wales Id., Alaska to Gulf of Calif.

Off Seattle, Wash. (Oldroyd).

Yoldia vancouverensis Smith, 1880- Vancouver Id. (Smith).

Subgenus Yoldiella Verrill and Bush, 1897. Very small; polished. Deep water.

Yoldia siliqua Reeve, 1855. Norton Sound, Alaska; also Atlantic.

Cape Simpson, B.C. (H.N. Lowe).

Yoldia intermedia Sars, 1865- Bering Strait & Norton Sound, Alaska. Circumboreal.

Yoldia oricia Dall, 1916. Oregon to San Diego.

Yoldia sanesia Dall, 1916. Southeastern Alaska to Pt. Conception, Calif.

Yoldia capsa Dall, 1916. Off Tillamook Bay, Oregon, in 786 fms.

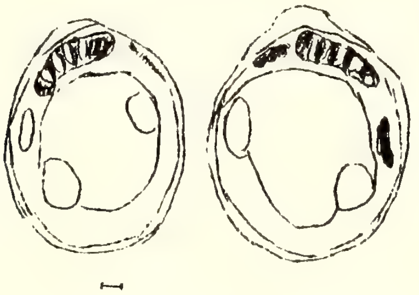
Yoldia cecinella Dall, 1916. Aleutian Islands to Gulf of California.

Genus Cyrilla A. Adams. (Pleurodon, Nucinella) Type- Huxleyia sulcata A. Adams.

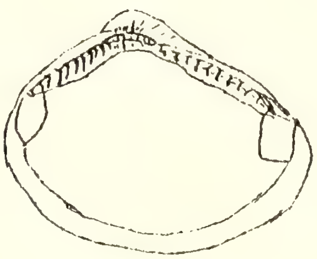
Like a small Nucula, but less nacreous, with sparse transverse teeth, and a long anterior lateral tooth.

Cyrilla munita Carpenter in Dall 1898- (Pleurodon munitum(Carp.) Dall, Nuculina munita Carp., Nucinella munita (Carp. in Dall) Keen, Nucula petriola)

Catalina Island, Calif. to Lat. 34 S. Off Catalina Id., 30 fms. (Willett).



Cyrilla



Tindaria

Genus Malletia Desmoulins, 1832. Type- Malletia norrisii (Sby.)-- chilensis Des. Distinguished from Yoldia by lack of rostrum and absence of lunule and escutcheon. Tooth series interrupted below the umbones. Deep water.

Malletia faba Dall, 1897- Queen Charlotte Ids., B.C. to Lower Calif.
581-627 fms. in mud (U.S.F.C. Stas. 3128,3670); rare. Monterey,Calif.

Malletia fiora Dall, 1916- Off Sitka, Alaska in 1569 fathoms.

Malletia pacifica Dall, 1897- Chignak Bay,Alaska to Monterey, Calif.
152-329 fathoms, in soft gray mud, off Point Pinos (U.S.F.C. Sta. 4509)

Malletia talama Dall, 1916- Bering Sea to Oregon.

Hertlein and Strong use several subgenera under Malletia as follows: Malletia s.s., Neilo H. & A. Adams, 1852, and Minormalletia Dall,1908. So far as known these subgenera have not been reported north of San Diego.

Genus Tindaria Bellardi ,1875. Type- Tindaria arata Bellardi.

Shell thick, globose, oval, closed; beaks swollen. Teeth continuous below umbones. Deep water.

Tindaria brunnea Dall, 1916. Bering Sea to Tillamook, Oregon.
U.S.F.C. Sta. 3604, Bering Sea, Lat. N. 54' 51", Long. W. 168 59' from 1401 fms. (H.N. Lowe Coll.)

Tindaria californica Dall, 1916. Santa Barbara to San Diego, Calif.

Tindaria cervola Dall, 1916. Off San Diego, Calif. in 822 fms.

Tindaria dicofania Dall, 1916. Off San Diego, Calif. in 822 fathoms.

Tindaria gibbsii Dall, 1897. Queen Charlotte Islands to Coronado Islands.
755-958 fathoms, in soft gray mud, off Point Pinos (U.S.F.C. Sta. 4530) .

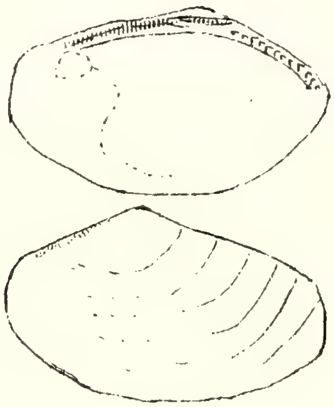
Tindaria kennerlyi Dall, 1897. Off Sitka, Alaska, to Santa Barbara Ids. in deep water.

Tindaria martiniana Dall, 1916. Cape San Martin to Santa Barbara Islands in deep water.

Tindaria mexicana Dall, 1908. San Diego, Calif. to Acapulco,Mexico in deep water.

Tindaria ritteri Dall, 1916. Off La Jolla, California , 293 fathoms.

Hertlein and Strong use a subgenus Tindariopsis Verrill & Bush,1897 for one of their southern species, but the subgeneric position of our northern group is uncertain.



Malletia

" Northwest American Species of Glycymeris" by George Willett, was received, published in the Bulletin of the Southern California Academy of Sciences, Vol. XLII, Sept.-Dec., 1943, Part 3.

This is an eight page paper with two pages of excellent figures. It will help to settle a number of disputes in regard to this genus and the paper should by all means be added to every west coast collector's library.

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Morris E. Caruthers, 120 E. Chestnut St., Glendale, 5, Calif. " Many thanks for sending me the minutes and proceedings of the club. I am enclosing a buck for expenses- .... I wish the club could meet on the first Sunday of the month then I at least could call myself " active" from the point of attendance. Nothing much new to report- no exchanging nor field work but am trying to get my duplicates in order so that when I get at exchanging again they will be in good shape to use. Had a visit from Gregg some time ago- he is the only collector I have seen for two years if I except Mr. Schick and the last named is even more inactive than myself. I don't even hear from anyone except thru the minutes. Has Tom gone in the army yet and is Rose still laboring at the factory? Drop me a line if you ever get time."

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Pfc. Thomas A. Burch, ASTU 3930, 680 W. 34th St., Los Angeles,7, Calif. Tom is in the army and in his senior year of his course in medicine.

Beatrice L. Burch, Hancock Bldg., University of Southern Calif., Los Angeles 7, Calif. is working toward her Ph. D.

Joseph S. Gaylord, My address until May 1st is 719 7th St., No., St. Petersburg, Florida. After that E. Longmeadow, Mass.

Pvt. Walter C. Caldwell, Co. B, 3rd Pltn., A.S.T.U. # 3857, Baylor University, Waco, Texas. " I enjoyed reading the notes on your last club meeting very much. I don't have much time to engage in any active collecting, but still like to stay informed on what is going on. Although I am primarily interested in marine mollusca, I have collected a few of the more common land shells of the Waco area during my brief stay here. Representatives of the Rumina, Polygyra, Bulimulus, and Anguispira seem to be the most common forms found here. My home address is: Walter C. Caldwell, 3444 1st Ave., No., St. Petersburg,6,GFlorida. ."

Dr. Jeanne S. Schwengel, 260 Marmaroneck Road, Scarsdale, N.Y. Dr. Schwengel has just returned home from Florida and in her newsy letter are some items that may be of interest to others. " While in Florida, I saw Ted Dranga, and got the final lot of his South Pacific collecting. We had finished all the Gastropods and this time, did the Pelecypods . I have not had time to unpack them as yet, but there are some beauties in the lot. Most of my foreign shells have come from Ted, so he usually gives me first pick of whatever he has. Also had a nice visit with the McGinty family, luckily finding Tom and Paul Jr both at home. Dr. Pilsbry was with his daughters at the time, so we all had a fine day together. Ted Dranga drove me down from Palm Beach."

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The last letter reminds us that the Burche s have been busy catalogueing several hundred lots of fine shells that at one time passed through the hands of Ted Dranga. Pleurotomaria,Thatcheria,some fine Voluta etc., the collection of Mr. J.D. Dodd formerly of Honolulu,Hawaii.

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Pfc. Charles B. Lee, 318th AB & HQ SQ, T.A.A.F., Tuskegee, Alabama. A long and friendly letter from Mr. Lee is at hand. He purchased a lot of the Clavert collection that was sold to the public 4 years ago in New York. He is at this time very much interested in fine Muricidae and Cypraeidae.

Mr. D. Thaanum, 43 Coelho Way, Honolulu 8, Hawaii. We are glad to hear that Mr. Thaanum is well and interested. " Let us hope we some day may be back to normal when life will be more worth while, and when that happy day arrives we may perhaps again get together on some shells from your part of the field."

MINUTES OF THE LONG BEACH SHELL CLUB

The next meeting of the Long Beach Shell Club will be held on April 9, in the Childrens Room of the Long Beach Public Library. They are now meeting the second sunday of every month at 2:30 P.M.

The meeting of March 12th was called to order by president Bormann. There were thirteen members present with guests. It was reported that the Fred Barnett family has been having bad times, both Tim and Munny being ill, and the shell room flooded during the recent rains.

Miss Stillwell being ill, Mrs. E.P. Chace was asked to take notes for the day.

Miss Libby was reported unable to be present having had a fall at school.

Mr. E.P. Baker had a pleasant letter from Dr. Calvin Goodrich which spoke of the late Dr. Herbert Smith, and this brought up stories of several of the older collectors and the way in which they had passed on their duplicates.

Mr. E.P. Baker gave a discussion on the Boring Sea Shells which was illustrated with a chalk talk and several very fine specimens both dry and alcoholic.

Elsie Chace, Secy. Pro. Tem.

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Mr. W.P. Cook, 2966 Union St., San Diego 7, Calif. Mr. and Mrs. Cook are both well and active. Mr. Cook has some very fine items on his list of duplicates for exchange, species seldom offered in trade. Of course, he casually mentions that he now has 142 different species of Cypraea so it will no doubt take other good items to get his good ones.

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TIDES

There are no really deep tides in the month of April but several that offer fair collecting in the sloughs.

April 3,	12:54 P.M.	Minus	0.1
April 4,	1:23 P.M.	"	0.1
April 5,	1:49 P.M.		0.0
April 16,	10:27 A.M.	Minus	0.1
April 17,	11:24 A.M.	"	0.4
April 18,	12:10 P.M.	"	0.6
April 19,	12:53 P.M.	"	0.7
April 20,	1:32 P.M.	"	0.5
April 21,	2:08 P.M.	"	0.3

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H.W. Harry, Ph M 2/c, Dispensary, USN Receiving Barracks, Portland, Oregon. Feb. 13, 1944. We were very happy to receive a long letter from our friend and fellow member. A few interesting notes from his letter follow.

" Portland has an extensive concert season, now at its height; the scenery is magnificent here, when the weather permits one to see it. There are several book shops here which have not been gone over by one interested in conchology, and I have been buying a great number of things. I have gone collecting several times, and though my species names are no doubt obsolete, I have found several interesting things. Of course, Linnaeus had no names to help him, so I trust to memory and a few references in the city library. All of you there must have the species I have found. Haplotrema vancouverensis (in great numbers, though found singly), Polygyra colombianus pilosa (found ovapositing in February), Carychium occidentale ?, Haplotrema sp., Margaritifera margaritifera falcata Gonidea angularis, Anodonta sp., besides several species of Pleurocera, Amnicola, a Planorbid, and slugs. The slugs I have been sending to Dr. Gregg, for what interest he might find in them, and apparently they are of some interest to him, for he writes encouragingly of them. I have been sending them in flat tobacco tins, when I could find the tins, and air mail special delivery. Though they were plainly marked " biological material", and addressed to a doctor, the post office asked me to open the last set, fearing perhaps, a time bomb cleverly concealed. A small riot resulted when I exposed the slimy beauties, but they let them pass.

I also try to keep up a lively correspondence with our friend in England, Glenn Webb, and I must say that his letters on methods and collecting are most interesting. I take the liberty of abstracting a few, to show you how active is his interest, though he must be greatly handicapped. In one letter we wrote that he is using his mess kit for a dissecting kit, boiling the water in his drinking cup, to kill specimens for dissection. He uses his metal dinner plate for a dissection tray. He has sent several drawings of anatomy, as well as observations on the live animals from time to time. " The thing that makes the captures the most interesting is my newly invented method of keeping live specimens in a very small place. The invention is quite simple. One takes a number of match boxes, reinforces the outer part with adhesive tape, and then impregnate the entire box with paraffin. Result: a small, nearly water-proof container suitable for the housing of medium sized snails. These micro-vivaria, when humidified by several layers of water soaked tissue paper, provide excellent snail cages. I have about a dozen of them. By putting them in a medium sized cocoa can when I am done feeding or examining the inmates, I find I can keep them at my desk." He mentions in his most recent letter that he had collected 43 of an estimated 90 snails in England. He has also gone to Cambridge, and bought a copy of Ellis on British Non-Marine Mollusca.

I was amused when you published (?) the post card several months ago, which I had written you saying I might be going home in leave, and that I couldnt find and Monadenia here. While at home, I returned to L.S.U. to find my arrival expected, since they had been regularly reading the Minutes. And when I returned to Portland, I had a letter from Miss Mariam Shepard, who is the only conchologist in Portland, to my knowledge. She had had a letter from Dr. H.B. Baker, of Philadelphia, asking her to contact me and tell me that I could find Monadenia " on a ridge at the west end of Oswego Lake. He had apparently read the minutes too, and contacted Miss Shepard by knowing she subscribed to the Nautilus. I later went to the west end of Oswego Lake, and found the Monadenia-- but only two bones, in 4 hours of searching. Maybe I didn't search the right habitat, but I would rather believe the time of year is responsible for their scarsity, naturally.

I also got up to Seattle one week end for a brief visit with Mr. Eyerdam and must say that he is one of the most interesting people I have ever had the pleasure of meeting."

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA No. 34- p. 1
April 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

The next meeting will be held April 23, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.

ANNOUNCEMENT- The opinion of John Q. Burch, Editor of these Minutes.
We had no idea that we had been so successful. Criticism is usually reserved for those suspected of doing something, and we have been severely censured for daring to write of scientific nomenclature and for giving a shell a manuscript name.

It seems that we have offended the custodians of the " scientific record" whatever that may be. Our little group study this branch of natural history for the pleasure of it and as relaxation from the cares of the daily struggle. Few of us are professional scholars and have no particular interest in establishing precedents. At the time we started mimeographing these minutes it was announced that it was not our intention to make a formal publication. It seemed to be generally agreed that a mimeographed paper is not to be made a matter of scientific record. Before the war we enjoyed our meetings and round table discussions of matters of taxonomy etc. These minutes were conceived to take the place of these meetings to some extent because many of our group found it impossible to attend in these days of two gallon gas tickets. Our hope was to establish an informal paper in which any student may express his ideas, state that he thinks he has a new species and even give it a tentative name or anything else without cluttering up the published record. Therefore it will be the policy of these minutes until such time as the club appoints another editor or changes the policy, to welcome all shell talk in exactly the same spirit and with the same lack of restraint that we would feel were we engaged in a round table verbal discussion. If you think you have a new species or anything else, but are not sure you are right, let us talk it over in these minutes and not spend the rest of your life planning to study up on it. The accumulation of such information may make it possible to publish an article on it. We all know students who have learned a great deal about certain species. They announce their intention of writing an article for the Nautilus or other recognized periodical, but before doing so, they feel that they must compare their shells with the types now put away for the ' duration' or perhaps even in Europe. They think they are obliged to read every possible reference to the literature as well as do much more extensive collecting. Perhaps they have one poor specimen or one valve of a pelecypod. They will not write up their formal article until they have more material to study etc. Unfortunately most of this information is lost forever due to the death from old age of the student who simply never did get around to complete his research.

An axiom of our law is that every man is entitled to his ' day in court'. Therefore, since our humble efforts in this little sheet have been attacked, it seems fair that we should have the right to take a look at this " scientific record" business. Most of us have had occasion to lay out specimens for study, and soon have at hand articles by eminent conchologists vague enough to amount to a description of any species in the genus if not of several genera, no figures, and the types either lost or not available. Nor is this habit of describing without figures confined to authors of a former generation. We have them doing it today.

We are regularly informed of some article dealing with our fauna published in the school organ of some almost unknown obscure little college or high school. Most libraries carry the World Almanac because it lists the addresses of most of them. When we promptly write for these articles we, as like as not, find that they have the dlightfully efficient custom of being out of print the day of publication. We have California mollusks described in foreign language periodicals in Europe and elsewhere. If some college student writes up an account of what the zoology class found on the annual picnic, that, my friends, is positively a matter of ' scientific record'. Of course, no museum or library ever has it. While we were working on one problem, we travelled from San Francisco to San Diego in order to examine certain periodicals only available in certain of our largest institutions. And even then could not find half of them. They are probably not all available in Washington, D.C. We also have a few of the ' august' who disdain to use paper and print on gold leaf exclusively or so we assume from the prices asked. It is surprising how few shell collectors are rich. The result is that some of these gold leaf affairs are about as difficult to get in hand as the others.

The mailing list of our poor effort has passed the five hundred mark, and is being catalogued by the great natural history libraries and museums of the world with few exceptions. Any institution interested in filing them is welcome to all we have while they last without charge.

This is a submission for a vote of confidence. Let us have your opinions. If the present policy in these minutes is doing irreparable harm to the aforementioned ' record' , we must indeed be bad, and should be enjoined forever from further activity.

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Minutes of the March Meeting- 1944

The Conchological Club of Southern California met at the usual time and place Sunday, March 26, 1944, the president, Mrs. E.P. Chace presiding. Present were 19 members and one visitor, Mr. O.C. Evers of Jacksonville, Fla.

No reports were forthcoming from either the membership or nomenclature committees. Mr. E.P. Baker reported a recent minus tide visit to an old collecting ground, a ledge exposed only at low tide in the entrance to Anaheim Bay, and soon to be removed in the widening of the channel to provide for Navy anchorage. He succeeded in getting a number of very fine Pholads, much larger than those usually to be found. The scheduled subject for study was then taken up by him, covering Glycymeris, Arcidae, Pinnidae,Pteriidae, and Pedalionidae. The second part of the subject fell to the lot of the secretary and consisted of Philobrya, a single species being found here, small but known to many of us, a few species of Ostrea common in numbers and difficult to distinguish, one introduced species from the east coast, and two from Japan. Dimyidae brought up the rear, one species collected but once (at Santa Monica), and seen by none of us. Material for study was furnished largely by Mr. Willett and Dr. Hill from museum collections.

Mr. A.M. Strong, to whom we owe so much, then discussed the past history and present problems in the study of these genera, notes on which will be found elsewhere in the minutes. Due to a large gathering at the nearby Coliseum and war time difficulties of transportation, the meeting adjourned- - at least before we were dispersed this time by the museum's closing gong.

Effie M. Clark, Secretary.

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Family GLYCYMERIDAE

Genus Glycymeris Da Costa, 1778. Type: Arca glycymeris Linnaeus. Coasts of England. (Axinaea Poli, 1791- Tuceta Bolten, 1798- Pectunculus Lamarck,1799)

The following works should be examined for the most recent reports on this group :

" Northwest American Species of Glycymeris" by G. Willett, Bulletin of the Southern California Academy of Sciences, Vol. XLII, Sept.-Dec.,1943,Part 3.

" Mollusks from the West Coast of Mexico and Central America, Part II" by Hertlein and Strong, Zoologica, Vol. XXVIII (Part 3), Dec. 6, 1943.

Description of the genus by Tryon S.S. Conch. " Shell orbicular, nearly equilateral, smooth or radiately striated; umbones central, divided by a striated ligamental area; hinge with a semi-circular row of transverse teeth; adductors sub-equal; pallial line simple; margins crenated inside."

Subgenus Glycymeris s.s.

Glycymeris corteziana Dall, 1916. Southern California. Bulletin 112 gives the range of this species from Forrester Island, Alaska to Cortez Bank, Calif. Mr. G. Willett in his paper referred to above, makes the following statement: " Evidently a southern shell, from moderately deep water. Eight specimens in the Willett collection are from 50 fms. off Santa Catalina Island, and in the Burch collection are two specimens from 40 fms. off San Clemente, and 25 and 50 fms. off South Coronado Island. As previously stated, the record for this species from Forrester Island, Alaska, resulted from misidentification. Other northern records should be carefully checked."

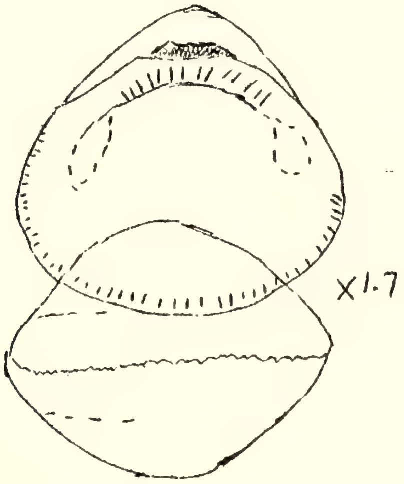
Members have sent in collecting localities for this species ranging from Alaska,Puget Sound,Monterey etc. However, we are omitting these records due to the strong probability of misidentification.

Glycymeris keenae Willett, 1943. Type locality and only record is Forrester Island, Alaska. (Bull. So. Calif. Acad. Sci. , Vol. 42, Pt. 3, 1943).

Glycymeris migueliana Dall, 1916. Dall in Bulletin 112 reports the range of this species as from Oregon to Magdalena Bay, Lower Calif. and the Cortez Bank. It was also reported from Forrester Island, Alaska, but Mr. G. Willett shows that this was due to a misidentification, Inasmuch as all members of the club seem to be entirely unfamiliar with this species, it is simply listed.

Glycymeris profunda Dall, 1879. Off Catalina Island and Redondo Beach, Calif. (Proc. U.S.N.M., Vol. 1, 1879, pp 13-14). Figured in G. Willett's paper.

Six valves from off Catalina Island in 200 fms. (G. Willett); one living specimen and an additional valve from off Redondo Beach, Calif. in 25 fms. (Burch); species was described from a fossil specimen from San Diego.



Glycymeris profunda Dall
Off Redondo Beach, 25 fms., 8/1940.

Glycymeris septentrionalis (Middendorff), 1849. Both type locality and range of this species is a question. Mr. G. Willett in the paper cited above reproduces Middendorff's original figure. It is very clear. Bulletin 112 gives the range of this species as from the Aleutian Islands to Forrester Island, Alaska. Mr. Willett shows this to be an error and makes the statement " Specimens labelled septentrionalis in west coast collections are almost certainly misidentified."

Therefore, for the above reasons we are omitting the numerous collecting records of the members until they have had an opportunity to check their specimens with the latest information. Hertlein and Strong suggest that this species should be placed in the synonomy of G. multicostata.

Glycymeris subobsoleta Carpenter, 1864. Aleutian Islands to Lower Calif.

This is the commonest species of the genus along our coast. " It is the flattest and thinnest of our Glycymeris." It is probable that many specimens identified as one of the above species are subobsoleta.

Mr. G. Willett in his recent report cited above gives an interesting account of the apparent change in this species between one end of the range and the other. Mr. Willett states:" A large series of specimens in the Calif . Acad. of Sciences, taken in 22 fms. on Cordell Bank, about 20 miles off Point Reyes, Marin County, Calif., is quite typical of subobsoleta, though perhaps averaging very slightly rounder than Alaskan shells. Off southern California, however, a morphological change in the species begins to be noted. Many specimens are as high as long, with posterior margin slightly, or not at all produced,and with the apical angle about a right angle." Mr. Willett suggests that sooner or later this southern species may be found to rate a subspecific name.

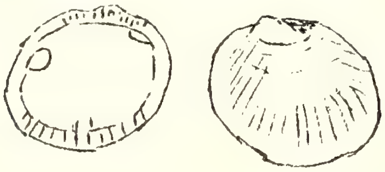
This is the common Glycymeris taken off Redondo Beach from littoral to 25 fms. on sand bottom and frequently washed in to the beaches in large numbers following blows. Also dredged off Pacific Grove, Calif. 8/1937, common in local Pleistocene deposits (Burch); Agate Pass, Kitsap Co., Wash., 1920, Friday Harbor, San Juan Islands, 1920 (W.J. Eyerdam).

Subgenus Tuceta Bolten, 1798. Type T. pectunculus-- Arca pectunculus Gmelin. Strongly ribbed with an arcuate hinge. For the strongly ribbed species . Glycymeris multicostata Sowerby, 1832, Dall in Bulletin 112 gives the range of this species as " (?) Monterey, Calif. to Gulf of Calif." and Guayquil". However, it is the opinion of most students that the California record of this species is probably due to a misidentification. Hertlein and Strong give the range " Punta Penasco, Sonora, Mexico to Guayquil,Ecuador." The type locality is Guayquil, Ecuador in 12 fms.

Subgenus Axinactis Morch, 1861. Hertlein and Strong use this subgenus for several southern species but it has not been recorded north of San Diego.

Family LIMOPSIDAE

" Shell small or medium sized, generally roundish and somewhat oblique, moderately solid, with a tufted periostracum. Umbones subcentral, slightly elevated, separated by a narrow rhomboidal ligamental area, in which the short ligament lies in a central, triangular pit. Sculpture consisting usually of more or less conspicuous radial striae. Hinge line curved, with a series of more or less oblique teeth. Posterior muscle scar larger than anterior one."(Dall, Bartsch, Rehder).



Limopsis

Genus Limopsis Sasso, 1827. Type: Arca aurita Brocchi (by monotypy).
Limopsis akutanica Dall, 1916. Off Akutan Island, Aleutians, 72 fms." Dall
Limopsis diegensis Dall, 1908. Santa Barbara Islands to Coronado Island" Dall
Limopsis skenea Dall, 1916. Bowers Bank, Bering Sea, 30 fms." Dall
Section Empleconia Dall, 1908.
Limopsis vaginatus Dall, 1891. Bering Sea and Aleutian Islands." Dall.

Family ARCIDAE

The following works should be examined for the more recent reports on this group:

Hertlein and Strong " Mollusks from the West Coast of Mexico and Central America, Part II", Zoologica, Vol. XXVIII (Part 3), Dec. 6, 1943.
Reinhart, P.W. " Classification of the Pelecypod Family Arcidae", Bul. Mus. Roy. Hist. Nat. Belgique, Tome 11, No. 13, 1935, 68 pp, pls. 1-5.
Reinhart, P.W." Mesozoic and Cenozoic Arcidae from the Pacific Slope of North America", Geol. Soc. America, Spec. Pap. No. 47, June 16 ,1943, pp XI, 1-117, pls. 1-15, 3 figs.
Reinhart, P.W. " The Holotype of Barbatia (Acar) Gradata (Brod. ' Sby.), Trans. San Diego Soc. Nat. Hist. Vol. IX, No. 10, pp 39-46, 1939.
Strong, A.M. " An Overlooked Arca from Southern Calif.", Nautilus, v.46, p 27.
Bartsch, Paul Proc. U.S.N.M. , Art. 9, p 2.

Genus Arca Linnaeus, 1758. Type (by subsequent desig. , Schumacher, 1817), Arca antiquata Linnaeus.
" Shell subquadrate or trapezoidal, ventricose, ribbed, striated or cancellated; hinge straight, with two series of similar comb-like (taxodont) teeth" Grant and Gale.

Subgenus Arcopsis Von Koenen, 1885. Subgenotype: Arca limopsis Von Koenen, 1885 (by subsequent designation of Reinhart, 1935). Reinhart gives Arcopsis full generic value.
Arca (Arcopsis) solida Broderip and Sowerby, 1833. Dr. Dall in Bulletin 112 placed this species under the subgenus Barbatia Gray, 1847, and gave the range as " San Diego to Panama". The San Diego record has been questioned because it has been said that this record was based upon one single dead valve taken from a kelp holdfast off San Diego. However, A. Myra Keen in " An Abridged Check List and Bibliography of West American Marine Mollusca", 1937, p 18, gives the northern limit of the range as 34 degrees N. latitude which would bring it up to Santa Monica Bay. Hertlein and Strong give the range " Asuncion Island, Lower Calif. and the Gulf of Calif. to Paita, Peru, and the Galapagos". The California record of this species is subject to some question and these records may all be due to a confusion with other species. One source of error in which this species was misidentified is described by A.M. Strong in the " Recent Marine Bivalve Molluscs of Los Angeles and Orange Counties, Calif." as follows: " A small Arca has been found in large numbers at Reef Point and Mussel Cove in Orange County, and at San Onofre on the northern line of San Diego Co. They were attached to the under side of rocks where the shells were buried in from 2 to 4 inches of clean sand and fine gravel. Small rocks were found which were covered with the shells. They were identified by Dr. Dall as a dwarfed form of A. solida occuring at the extreme end of the range. With the normal form there were found a small elongated form which has been identified as the young of A. reticulata Gmelin. but which Dr. Dall states are young males of A. solida. " We now know that the species referred to is Arca (Acar) pernoides Carpenter. However, these two should be easily distinguished because of the raised muscle scar in Acar, which does not occur in other subgenera. Reinhart suggests that this species has at times been confused with A. gradata and very tersely states the difference between these two as follows:

" A. solida, however, may be distinguished by its ligament, which occupies only a small triangular area under the beak, on each valve, leaving most of the cardinal area devoid of ligament. On B. gradata, on the other hand, the ligament occupies most of the cardinal area."

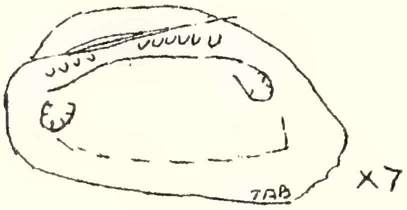
Subgenus Acar Gray, 1847. Type: Arca divaricata Sowerby, 1833 (by sub. desig . Stoliczka, 1871). The distinguishing feature of this subgenus is that the muscle scars are elevated. Dall,Bartsch, Rehder in " Marine Molluscs of Hawaii" and other current authors use Acar as a genus under the family Arcidae. Reinhart raises Barbatia (subgenus of Arca with most authors) to generic standing and places Acar as a subgenus of Barbatia. Hertlein and Strong and many other authors consider Acar a subgenus of the genus Arca and we are following them for the present.

Arca (Acar) reticulata Gmelin, 1792. Range: Atlantic- North Carolina to West Indies and Texas. While Dr. Dall in Bulletin 112 listed this species as occuring from San Diego to Ecuador, there seems to be little question but that all Pacific coast identifications of this species have been in error.

Arca (Acar) pernoides Carpenter, 1857. Arca bailyi Bartsch, 1931. Reinhart gives the range as " Topanga Beach (near Santa Monica) to San Geronimo Island, Gulf of California (H.N. Lowe Coll.).

This species has been the subject of a great deal of dispute. The references given above all deal with this- Bartsch, Strong, Reinhart etc. We had thought the matter settled when A.M. Strong in 1932 (Nautilus) stated that A. pernoides is the same species as A. bailyi Bartsch, and Reinhart concurred in this opinion in his paper, 1939,(Trans. San Diego Soc.). However, Reinhart in his more recent work (Geol. Soc. Amer. #47) abandons the name pernoides and returns to bailyi. Reinhart's reasoning is quoted here: " Strong (1932,p 27-29) concluded that this species was identical with " Byssoarca" pernoides Carpenter described from San Diego and believed from its description to be an Acar. This conclusion, which was until recently concurred in by me (Reinhart,1939), had in its favor the fact that only one Recent species of Acar is known from the southern California coast. The older name, therefore, appeared the correct one to use. However, Dr. S.S. Berry has pointed out (personal communication, 1939) an obvious discrepancy in this conclusion. Carpenter's original description of B. pernoides (1857) gives its length as .68 " pollex", indicating a much larger species than the southern California Acar, which is always small, seldom exceeding 9 mm. in length. It is therefore probable that the name Byssoarca pernoides refers to some other species, and that Barbatia bailyi is the correct name for the southern California species."

Collecting data: Palos Verdes Estates 9/1936 under rocks at low tide, from Chama beds in Newport Bay, Calif. 10/1935, from under stones at low tide at San Onofre, Calif. rubble reef and very abundant. Could sweep them off with a broom 11/1933, same habitat from El Morro Pt. north of Ensenada, Mex. 10/1936 (Burch); Laguna Beach, and La Jolla, Calif. (Willett); " Recorded as B. gradata Sowerby from 12 fms. in sand off Monterey, by Berry, who now states that the record is extremely doubtful" (A. Smith); Mr. E.P. Chace reported taking the species at Monterey, Calif, , but again Mr. Chace is doubtful of his record.



Arca (Acar) pernoides Carpenter
San Onofre, Calif.

Subgenus Barbatia Gray, 1847. Type: (by orig. desig. Gray, 1847), Arca barbata Linnaeus. Mediterranean. " According to Gray, Barbatia is distinguished by the lengthening and the increasing obliquity of the teeth from the center to the ends of the hinge line, and by the hairy (bearded) epidermis. It is usually a comparatively small, not very thick shell with somewhat irregular fine radial striations and a narrow cardinal area. It is elongate-quadrangular in outline, with the corners well rounded, and usually has only a narrow byssal gape." Grant and Gale.

Arca (Barbatia) reeveana d' Orbigny, 1846. Arca helblingii Bruguiere"Reeve Range by Reinhart " Southern California(Keen, 1937, p. 18) to Peru and Galapagos Islands (Grant and Gale, 1931, p. 143).

Collecting data: Note from A. Myra Keen " We have a fresh looking valve of Barbatia reeveana a student picked up at Santa Monica Beach. Has any one taken it alive in southern California ?" ; Note from A.M. Strong (Rec. Mar. Biv. Moll.) " One specimen found near the Arches below Balboa, the animal not living but the shell in fine condition. This is the only specimen known from this district, and was identified by Dr. Dall (Tremper)."

Subgenus Larkinia Reinhart, 1935. Type: Arca larkinii Nelson (by orig. desig.)

Again we have some difference of opinion about this group. Reinhart,the author of the name, establishes Anadara Gray, 1847 (subgenus of Arca with most authors)as having full generic value (in fact uses a subfamily Anadarinae) and described Larkinia as a subgenus of Anadara. However, Hertlein and Strong use both Anadara and Larkinia as subgenera of Arca and we will follow them for the present. They distinguish between the two in their fine key as follows: " Central teeth perpindicular to the hinge line .. Anadara; Central teeth diverging .. Larkinia."

Arca (Larkinia) multicostata Sowerby, 1833. " Newport Bay, Calif. to Panama, and the Galapagos Islands." Type locality: Gulf of Tehuantepec, Mexico in 12 fms.

Collecting data: Newport Bay, along sandy bank of the slough, 1934 (Burch); a half dozen specimens reported to have been taken in a dredge by a fisherman at a point a short distance below Laguna(Strong).

Genus Bathyarca Kobelt, 1891. Genotype: Arca pectunculoides Scacchi,1833 (by original designation) Type locality: Bay of Panama.
Bathyarca nucleator (Dall), 1908. " San Diego to Panama"
Habitat: Type specimen from 1270 fathoms.
Bathyarca pompholyx (Dall, 1908. " Santa Barbara, Calif. to the Galapagos Islands and mid Pacific in deep water." Type locality: Not designated.
Habitat: Found at depth of about 2000 fathoms (Reinhart).

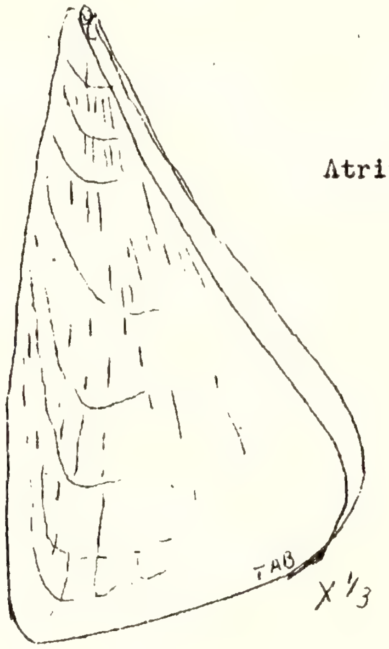
Family PINNIDAE
Genus Atrina Gray, 1842. Type: (by sub. desig., Gray, 1847), Pinna nigra Chem. from the Indo-Pacific.

Many of our members have specimens of the Genus Pinna Linnaeus, 1758 from more southern waters. No Pinna has ever been reported north of San Diego. They may be easily distinguished because the genus Pinna has a median groove interiorly dividing the nacreous layer into two parts. The genus Atrina does not have this groove.

Atrina oldroydi Dall, 1901. Type locality: San Pedro, Calif. in 25 fathoms. Range: San Pedro to Cedros Island and Magdalena Bay, Lower Calif. (Hertlein and Strong).

" The type specimen of this species, now in the collection of Stanford University, was brought up by a fisherman from a depth of 25 fath. off San Pedro. A second specimen in the collection of Mrs. W.H. Eshnaur was taken on a fish line in 50 fath. in Santa Barbara Channel by fishermen working out of Newport. Two other specimens in the collection of Dr. R.H. Tremper came from the same source, and he also has a few specimens which were taken off the coast of Lower California. Still another specimen in the collection of Mr. C.E.White, was taken by fishermen off San Onofre. As far as is lnown by members of the Club these are the only specimens in existence of this very rare shell."(Strong).

The specimen mentioned in the collection of Mrs. W.H. Eshnaur is now in the Burch collection.



Atrina oldroydi Dall

Family PTERIIDAE

" Shell oblique, Aviculoid, alate, inequivalve, adult with one adductor scar; ligament alivincular; byssys present; young with hinge teeth, becoming obscure with age". " It is somewhat intermediate between the dimyarians and the monomyarians, the young possessing two adductor muscles, the anterior becoming very small or absent in the adult." Grant and Gale.

Genus Pteria Scopoli, 1777. Type: Mytilus hirundo Linnaeus (by monotypy), from the Mediterranean. (Avicula Bruguiere,1792)

" Shell oblique, inequivalve, eared, byssal notch present under anterior ear of right valve; cardinal area linear, with obscure or obsolete teeth; dorsal margin long, straight; scylpture not prominent; shell fragile." Grant & Gale.

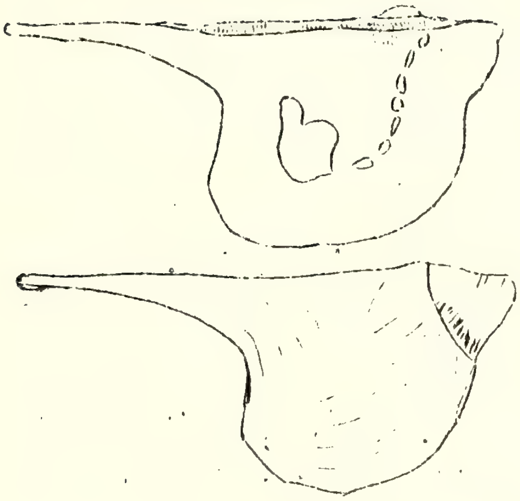
Pteria sterna Gould, 1851. " Hueneme Point, California to the Gulf of Calif., and south to Paita, Peru" (Hertlein and Strong). Type locality: Mazatlan, Mexico.

Many of us have this species labelled Pteria peruviana Reeve, 1857- Avicula peruviana Reeve, but Hertlein and Syrong and others have shown the species to be identical with P. sterna.

An interesting thing to consider about this species is brought out by Dr. Hanna in his paper " Exotic Mollusca in California" (Bull. Dept. Agric. 1939): " Dr. Fred Baker has advised (verbal communication) that the presence of this species in San Diego waters is due almost certainly to its having been carried there on the bottoms of ships and barges. Dall (Bull. 112,) gave the range as San Diego to Panama, but made no mention of the probability of its being exotic."

Collecting data: Fine 4 inch specimens taken from pilings under 101 highway bridge at Newport Bay 6/28/1937 (Mrs. P.M. Connelly) (Burch); Mr. Edgerton B. Sprague of Santa Ana took over 50 large specimens from a float that was brought ashore in Newport Bay in March, 1941; old marine ways, San Diego (F.W. Kelsey).

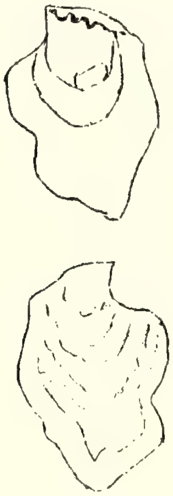
Pteria viridozona Dall, 1916. Long Beach, Calif. (Lowe). " Specimens in the Golisch collection taken from the backs of deep sea crabs off San Pedro are believed to belong to this species.(Chace) (Strong). However, this is a very questionable species with no member of the club sure of what it is.



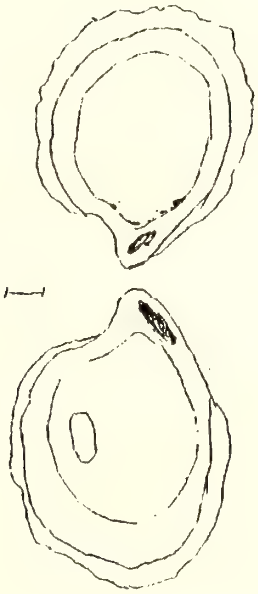
Pteria

Family PEDALIONIDAE
Genus *Pedalion* Solander, 1770. (*Melina* Retz. 1788, *Perna* Brug. 1799).
Type: *Perna ephippium* Linnaeus.
" Shell nearly equivalve, compressed, subquadrate; area wide, cartilage pits numerous, elongate, close-set; right valve with a byssal sinus; muscular impression double." (Tryon).
Pedalion chemnitzianum d' Orbigny, 1845. " Coronado Islands to Chile. Also Atlantic." Type locality: Cuba " (Hertlein and Strong).

A.M. Strong suggests the probability that the Coronado Islands record for this species may be *Pedalion janus* Carpenter, a more delicate species with a more northern range.



Pedalion



Philobrya

Family PHILOBRYIDAE

Genus Philobrya Carpenter, 1872. (Bryophila Carpenter, 1864). Type: (by monotypy) Bryophila setosa Carpenter.

" Shell like that of a minute Pinna with pointed beaks; upper margin straight, with a strong internal ligament, anteriorly somewhat indented by the byssal sinus, ventrally and posteriorly rounded and gaping; posterior muscular scar subcentral, indistinct." (Tryon).

Philobrya setosa Carpenter, 1864. " Forrester Island, Alaska to Gulf of Calif."

Type locality: Cape San Lucas, Lower California.

Collecting data: Dredged 7 fathoms off Santa Monica, Calif. 12/1935, 15 to 40 fathoms off Monterey, Calif. 8/1937, taken in abundance at low tide on the bay side of the San Pedro breakwater in holdfasts of corraline algae, 1937(Burch) San Pedro, Calif. (Lowe Coll.); San Clemente Island (Hemphill); Coronado Ids. (Stephens); Guadalupe Island (Huey); 5-25 fathoms, on sea mosses and calcareous algae, off Pacific Grove, Calif., Common (A. Smith); Forrester Id., Alaska, Cayucos,San Pedro and Santa Cruz Island, Calif. (G. Willett); " This moss-loving species is not at all uncommon at White's Point, Point Firmin, and Reef's Point, Calif. (Chace); " Found quite plentifully on the moss on the backs of abalones at Isthmus Cove, Catalina Island. (White) (Strong).

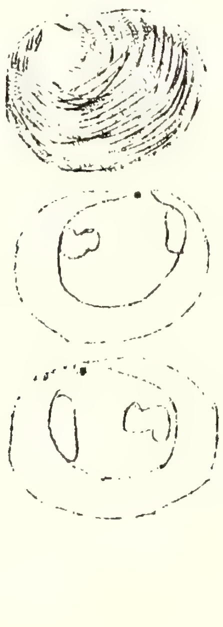
Family DIMYIDAE

Genus Dimya Rouault, 1848. Type: Dimya deshaysiana Rouault (by monotypy).

" Shell small, irregularly orbicular, inequivalved, adhering by the right valve to substratum, left valve smaller than right valve, greatly compressed and flattened, external layers nacreous, internal ones porcellaneous, whitish; umbones only slightly prominent, submedial. Surface smooth or with very fine radial sculpture or partaking of the sculpture of the substratum. Hinge line short, straight; external ligament slender, linear; internal ligament in a small triangular pit. Interior white, with a double posterior and a single anterior adductor muscle scar; inner margin radiately wrinkled."Dall,Bartsch,Reh.

Dimya californiana Berry, 1936. (Proceedings of the Malacological Society, Vol. XXII, Part III, Nov. 1936). 100 fathoms off Santa Monica, Calif.

We know of no record of this species other than the type specimen which is presumably still in the possession of the author, Dr. S.S. Berry. No member of the club has seen it. It was obtained from a stone taken by fishermen by W.H. Golisch, summer 1918.



Dimya

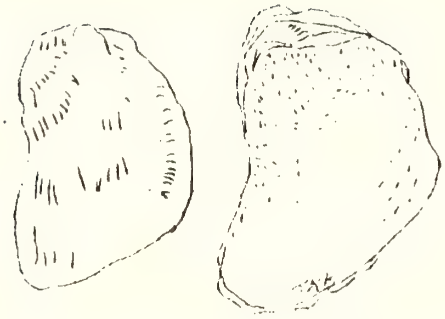
Family OSTREIDAE
" Shell distorted by sessile habit; only the posterior adductor muscle present in the adult; generally attached by the left valve, which may be more ventricose than the right". Grant and Gale.
Genus Ostrea Linnaeus, 1758. Type (by subsequent desig., Children, 1823)- Ostrea edulis Linnaeus, figured by Reeve.
" Shell irregular, with terminal beaks; sculptured by imbricating lamellae and plications, or rarely almost smooth; lower valve generally deeper than the upper valve, which may be flat or externally concave; ligament in a mesial groove." (Grant and Gale).

Ostrea palmula Carpenter, 1857. Range given by Dr. Dall in Bulletin 112 is from " Puget Sound to Gulf of California". However, it is now thought that this species is confined to West Mexico, and the Gulf of California. Most of us have been following the opinion stated in Grant and Gale as follows: " O. palmula has palm like foliations on the outer margin, and a row of denticles which fit into the margin of the opposite valve." True Ostrea palmula Carpenter from the Gulf of California according to Mr. A.M. Strong is characterized by a brown stain or mottling of the inner surface. This is not true of the specimens we have been labelling with this name from the California coast. Some local coll--ectors have been disposed to confuse Ostrea mexicana Sowerby with this species but Strong advises that mexicana from the Gulf is always dark inside and out, almost black. Dr. L.G. Hertlein of the California Academy of Sciences is of the opinion that the specimens we have been identidying as O. palmula are in fact: Ostrea lurida laticaudata Carpenter. Carpenter states that this " Passes toward palmula". Inasmuch as no specimens have been seen that will fit the description of typical palmula it is our opinion to follow Dr. Hertlein and state that all such specimens taken north of San Diego, Calif. are in reality the above species.
Ostrea lurida Carpenter, 1864. " Sitka, Alaska to Cape San Lucas, Lower Calif ." (Dall).

This common species found the length of the coast where exposed at low tide It is almost smooth except for the irregularities of growth. It occasionally has indications of brown bands running toward purple.
Ostrea lurida rufoides Carpenter, is thought to be but a color form of lurida.
Ostrea lurida expansa Carpenter, 1864. " Monterey to San Diego, Calif." Dall.

The general opinion has been that this is a situs form only. It is usually found singly and not in clusters and the flat form easily explained. However, Dr. L.G. Hertlein according to Mr. A.M. Strong suggests that this is a flat form grading into conchaphila.
Ostrea conchaphila Carpenter. Redondo Beach, Calif. to Panama. This is a flat species with strong brown stripping. It is a deeper water shell and does not cluster, usually being found growing on dead shells and pebbles. It is probable that the specimens from the backs of crabs taken off Redondo Beach are this species. It has been dredged on stones from the gravel beds off Redondo Beach in as much as 20 fathoms. However, Hertlein says that the northern range records of conchaphila and expansa are hardly separable, for, by definition expansa " passes into Ostrea conchaphila Carpenter."

Ostrea veatchii Gabb, 1866. Grant and Gale place this species in the synonomy of Ostrea vespertina Conrad, 1854. It is found recent in Mexican waters but is known only as a fossil in California. It is listed here only because Dall had it in Bulletin 112.



Ostrea lurida Carpenter
San Onofre, Calif.

Introduced species of Ostrea

Ostrea chilensis Phil. " This is the large edible form of the Gulf, often reaching a length of ten inches or more." (Pilsbry and Lowe). A.M. Strong reported that this species has been introduced into Newport, Mugu, and Morro Bays but as far as known did not take.

Ostrea virginica Gmelin, 1792. Imported from the Atlantic coast. This species has been planted extensively in California waters according to Dr. Hanna from as far back as 1870. However, propagation in California waters has never been successful probably due to temperature conditions.

Ostrea laperousii Schrenck. Introduced from Japan. Many of us have been classifying the round form as laperousii and the long slender form as Ostrea gigas Thunberg, 1793. Several other names have been placed in the synonomy of this species by authors. The latest data indicates that these Japanese oysters are but one species, laperousii. Dr. G. Dallas Hanna, California Academy of Sciences, " Exotic Mollusca in California", Bull. Dept. Agric. 1939 says:" The Japanese oyster has been widely introduced along the west coast of the United States and forms a thriving industry in many of the bays of California at the date of writing. The species has been cultivated in Japan for at least three centuries and the spat is brought here for planting. Growth is rapid and the quality is said to compare favorably with the best oysters elsewhere.

The name laperousii is sometimes restricted to the fluted, rather round form and gigas Thunberg, 1793, is applied to the long strap-like form. Both forms have been introduced, but the first is the most important one in commerce. Intergrading specimens between the two are abundant. Apparently the shape is largely dependent upon the place each individual happens to grow. Since Thunberg's name is preoccupied by " gigas" Meuschen, 1781, it appears that the Japanese oyster should be indicated as " laperousii" according to Dr. L.G. Hertlein of the California Academy of Sciences".

References on this species follow:

Keep, Josiah " West Coast Shells", 1911, p. 57; 1935 Ed. by J.L. Baily, p. 51.
McMillan, H.C. & Bonnot, Paul " Oyster Culture in Calif.", Calif. Fish & Game, vol. 18, no. 3, July 1931, pp. 246-251, 5 text figs.
Galtsoff, P.S. " Introduction of Japanese oysters into the United States", U.S. Dept. Commerce, Bur. Fisheries, Fishery Circular, no. 12, Aug. 1932, 16 pp.
Bonnot, Paul, " The Calif. Oyster Industry". Calif. Fish & Game, vol. 21, No. 1.
MacGinitie, G.E., " Amer. Midland Naturalist" vol. 16, no. 5, Sept. 1935, p.721
(Introduced in Elkhorn Slough; name used, " O. giganteus".

Joseph S. Gaylord, 719 Seventh Street North, St. Petersburg, Florida. " The minutes of your club have proved very interesting to me in many ways. It will be a pleasure to have them keep on coming to me. My address after April will be East Longmeadow, Mass.

The St. Petersburg Shell Club has been having from 70 to 80 interested persons in attendance this winter. Recently a paper has been read before the club on barnacles and another on poison cones. At each meeting some attention has been given to the pronunciation of the names of the shells being studied. The enclosed report gives a hint as to what we have been doing in the matter of pronunciation. A dictionary of the names of the commoner shells is greatly needed. What changes in this report would you suggest? "

Perhaps the best way to give Mr. Gaylord our opinion regarding the future troubles for the Noah Webster of shell names is to mention one actual experience we had in the Conchological Club of Southern California. We had two very able scientists as our guests. (1) a priest who had been educated thoroughly and used the classical Roman Latin pronunciation (and for that matter as is now taught in all of our high schools and colleges in this country), and our other guest (2) was a very able conchologist who had been educated in Russia and used the continental pronunciation of Latin, and to add to the fun we may mention (3) the anglicised Latin pronunciation (you will find most of our molluscan genera at least in Webster's Unabridged Dictionary. This is no doubt the most correct system for us to use in the United States. However, please do not get the idea that the man who may pronounce the list of names in such a manner as to amaze us is incorrect. The truth is that these Latin names may be pronounced a number of entirely different ways and all be correct according to some school. Strictly speaking the classical Latin pronunciation seems the most logical. It has never been brought to our attention just why there should be an anglicised pronunciation so radically different. Of course, there are a few very obvious reasons why the classical Latin cannot be universally used. The original idea was to have all scientific names descriptive of the shell and in Latin. If we had stayed with that policy all would no doubt be well. However, when a Russian names his shell after one of those cities or provinces about which we are now reading in the papers it is quite obvious that old Cicero himself would have strangled trying to pronounce it in classical Latin. But that objection has never seemed too sound because neither is it possible to pronounce many of those names in English.

But to summarize. The policy in the Conchological Club of Southern Calif. is to use any pronunciation you care to use and you will not be corrected for the system you use.

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Mr. and Mrs. E.P. Chace, 24205 Eshelman Ave., Lomita, Calif. This is the address of the new Chace Hacienda. We neglected to get the name of the ranch but understand that it is about 1 mile north of 101 highway

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Cpl. F.M. Bayer, A.S.C.R.D. #1, Squadron 2, Daniel Field, Georgia. " Just another short note to give you a new address. This, too, will prove temporary, I hope. The minutes reach me at Riviera O.K. and although I do not often see them, they go into my files for reference, and I appreciate them immensely. By the way, our new Rivera, Florida address is Box #737."

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Professor T.D.A. Cockerell, Box 411, Palm Springs, Calif. " I have found your publication very interesting. I am not myself doing anything with mollusca as there is no opportunity here. But I am still very much interested. We expect to go back to Colorado (908 10th, Boulder) when the museum vloses early in May, but as far as we know now, we shall be back here in October for another season ."

Minutes of the Long Beach Shell Club

The Long Beach Shell Club met in the Children's Room of the Public Library, April 9, 1944. The next meeting will be held in the same place on May 14, 2:30 PM

Mr. Ralph Borman, the president, called the meeting to order - 16 members and 3 visitors present. A communication was read from Mr. George Datson, chairman of the committee on school cooperation was read. Representing the public schools he asked the club to cooperate in the observance of Public School Week. Mrs. Ralph Borman and Miss Julia Rogers made some excellent suggestions. Mr. Borman appointed Mrs. Borman and Miss Ruth Eaton to arrange display of shells and shell books at the Public Library. Miss Rogers and Mrs. Jean Wilkins are to have charge of displays in the department store windows- Buffums and Walkers. These displays will include a young child's collection, older children's collections, choice specimens from the Agassiz Club collection, and specimens from the curio shops.

Miss Lena Higgins spoke on " respiration" in some gastropods, illustrating her highly informative talk with ample specimens.

Mrs. Claude Lehman reviewed Wm. Beebe's " Book of Bays" (Harcourt Brace 1942) stressing the scientific points of the book. One chapter provoked a lively discussion of regression. Mr. Wm. Ulrich is thrilled with his latest acquisition, the Whitmore collection of Redondo Beach. The club is promised an open house soon.

Mr. Arthur R. Merklin, 218 B Roycroft Ave., Long Beach, a visitor, exhibited a shell, C. madagascarensis, a native of the Hawaiian Islands, that he had taken from the stomach of a sculpin caught between Long Beach and Catalina Island.

Generous Mrs. E.P. Chace was on hand with two big boxes of shells to give away.

Grace Stilwell, Secretary.

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Miss Ruth Eaton has a new address- 326 West 5th, Long Beach 2. Phone 725-34.

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Miss Alice L. Waterbury passed away Friday, April 7, at the W.C.T.U. Home for Women in Eagle Rock, where she has lived for the past 6 years. She was born Oct. 21, 1858 and from her youth took a keen interest in the study of flowers, shells and birds. She was a member of the club for some 30 years or more although unable to attend the meetings during the past 7 years retained her interest in it up to the time of her death. She is survived by a younger sister, Mrs. Stella Penney, who came to California from Miami, Fla. about 4 yrs. ago. Those of the club who knew Miss Waterbury will not soon forget her.

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We are greatly indebted to Dr. A. Myra Keen of Stanford University both for her generous offer to permit us to use any of the figures in her " Illustrated Key to West North American Pelecypod Genera" as well as for her invaluable assistance with the taxonomy. We are very much interested to hear that Charlotte Doty, a graduate student at Stanford, is working on a key to gastropod genera, to be a companion piece to Miss Keen's work on the pelecypods.

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Your editor, John Q. Burch, has been trying for the past several years to purchase certain publications without avail. If anyone should know of a copy of Theile or of Carpenter's Mazatlan Catalogue, we will greatly appreciate knowing of it. In fact, we are always interested in the purchase of all publications pertaining to conchology.

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We have recently received several publications of interest. " Beschreibung der Naturalien-Sammlung der Universitat zu Rostock" by von Heinrich Friedrich Link, 1806-1808, Facsimile Reproduction of the pages relating to Mollusca. This rare work may be had by writing Mr. J.R. le B. Tomlin, 23 Boscobel Road, St. Leonard's on Sea, England at a cost of $4.00.

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#34

NOTES ON SOME NATICAS COLLECTED BY W.J.EYERDAM

I have just finished overhauling the family Naticidae that are in my collection and putting them in a large drawer. There are about 140 species represented so there seems to be rather a good start in that family. Fifteen species are represented from this coast north of Mexico. A fine specimen of Eunaticina oldroydi collected by the Chaces seems to be one of the rarest ones.

Polynices lewisii Gray is apparently the giant of the family and reaches its greatest size in Puget Sound where it raises Cain with the butter clams and rock clams. I have a five inch shell that I collected right here in Seattle. They some times attain 6 inches. The animal when extended is quite large and is used as food by the Indians. The smallest species of the family that I have is Natica amphialis Watson from Fovieux Strait, New Zealand. A full grown specimen is less than one eighth of an inch.

In Izhut Bay, Afognak Island, Alaska in 1922 I dredged several Polynices pallida B. & S. that were completely absorbed by Cliona sponges without injuring the shape of the shell. Hermit crabs inhabited these sponge shells living in a perfect state of symbiosis.

Some of the most outstanding Naticidae that I have collected are the following species : Natica sulcata Born from Cuba is one of the prettiest. It is a closely ribbed white shell with light brown spots. Natica maculosa Lamarck is still prettier. It has dark brown spots all over the shell. I found it at Singapore. Natica panamensis Reeve from Panama is immaculate white with a honey amber operculum. Natica broderipiana Recluz I collected on the fine shell beach near Corinto,Nicauragua. It is a beautiful pale yellow with three rows of broken lines of dark brown and white alternate rhomboids.Natica albumen Lamarck is a heavy flat white shell that has been formed to withstand the rigors of a heavy surf pounding beach. I collected this species on the same beach where the American Marines made their first landing attack near Berendi on Guadacanal Island. Natica ampla Philippi is quite a large shell with a deep and wide flaring umbilicus. I collected some of these in Oct. 1930 near the same spot where Commodore Perry landed and met the Shogun at Tsuruga, Japan. I also collected over one hundred other species of shells in this place including the following Naticidae: Polynices didyma Roding, Polynices albumen L., Natica rufa Born, Natica bicolor Philippi, Natica clausa Brod. & Sby,and Natica vitellus spadicea Gmelin.

Natica chinensis Lamarck is a pretty shell which I collected on China Strait, Papua, within about a mile of the place where the cannibal king of St. Aignan Island in the Louisade archipeligo captured over 200 Chinese coolies from a shipwreck less than 50 years a go. These Chinamen were kept on a small island in the strait and were slaughtered one at a time for the royal board exclusively. This old king, who is said to have eaten over a thousand people was still living when the Whitney South Sea Expedition was exploring the Islands.

Natica aurantia Lamarck is a pretty shell which is almost canary yellow. I collected it at Port Moresby, Papua, in 1930. Gryptonatica xanthostoma Desh. is a white shell with a violet interior that I collected on Bering Island, Gulf of Kronotski, Kamchatka and Japan. Sigaretus concavus Lamarck resembles S. californicus but is much heavier, is brown inside and nearly black on the outside. This species I collected at Supe and at Callao, Peru.

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Catalogue and Revision of the Gastropod Subfamily Typhinae", by A. Myra Keen, Journal of Paleontology, Vol. 18, No. 1, pp. 50-72, January 1944.

This fine paper contains 20 text figures, with charts and other matter. It is a very thorough monograph on a very confusing group and should be added to all conchological libraries.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
May 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

Any institution or library interested in filing these minutes is welcome to all available back issues and a place on our mailing list without charge.

The next meeting will be held May 28, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the fourth sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities etc. to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.
Phone Redondo 6957.

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Minutes of the April Meeting- 1944

The Conchological Club of Southern California met at the usual time and place April 23, 1944.

There were 20 members present.

It was moved by Dr. Gregg and seconded by Mr. George Willett that the club go on record that its members express their entire approval of John Q. Burche's policy as to material appearing in the minutes. The motion was carried unanimously.

A motion was also made and carried that $6. be appropriated for purchase of flowers sent in the name of the club to the funeral of Miss Alice Waterbury.

The meeting was then given over to the two who had charge of the days program. Dr. H.R. Hill led with the subject of Pectinidae. This proved, indeed, to be a live subject and resulted in much discussion, both as to whether subgenera should be elevated to generic prominence or whether they should not. The consensus of opinion was that it is a matter for each to decide for himself with plenty of authority to back either decision. Miss Cook followed with the discussion of the genus Lima. Time did not permit a finish of the discussion of the genus and it will be continued next meeting. The meeting was duly adjourned. Effie M. Clark, Secretary.

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" Panamic Marine Shells", Synonomy,Nomenclature,Range and Illustrations, by Maxwell Smith. Published by authority of the Beal-Maltbie Shell Museum of Rollins College, Winter Park, Florida. This fine work will find its place on the shelves of all west coast conchologists as a necessity. The book consists of 127 pages with over 1000 figures, and of course, many of the species discussed range to California.

The price of the book is $6. Your orders should be sent direct to Dr. Maxwell Smith, Box 65, Winter Park, Florida or if you wish to send your order through the club we will be glad to forward your order.

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Mr. and Mrs. James C. Marsh, Hyde Park Post Office Box 4, Los Angeles 43,Calif. We are very happy to have a long friendly letter from Jim and hear that they are all well. Jim's moral support and approval of our effort in the minutes is sincerely appreciated.

If you have not been receiving " Shell Notes" by Frank Lyman, Lantana, Florida, you have been missing something. There is no charge for them, all you have to do is to write Frank and ask to be placed on his mailing list. The last two issues, No. 7 and No. 8 have articles by Dr. B.R. Bales of Circleville, Ohio on the Florida Rock Dwellers and these papers are very definitely worthy of a catalogue card in any scientific library. There are other fine articles as well as frequent notes about methods of collecting and preparing shells.

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Rev. Paul D. Ford, Box 924, Nassau, Bahamas. We have a cordial letter from Mr. Ford which contains the following interesting note " ... I will wait until I get to Sanbury. I am planning to leave here about the middle of May . Our exchanging will be a little easier in the States, so you will hear from me then. I am bringing home a very fine collection of shells."

Mr. John H. Clarke, 1246 S. Hope St., Los Angeles 15, Calif. We were glad to hear from our good member Clarke again, and thanks for the generous donation. Miss Mavis M. Holloway, 32 Pentland Ave., Mt. Eden, S.2, Auckland, New Zeal--and- is already on our mailing list though. We have many fine specimens in our cabinets bearing her label. In his good long letter Clarke mentioned our mutual correspondent Grech " .. in fact, Grech wrote that they had been " pretty busy" there-- which strikes me as being a somewhat cautious description of happenings over Malta way, huh? I am reminded by that of a letter I had from the late Hugh Fulton, right in the midst of the first bomb attacks, in which he wrote that the " racket is annoying at times". Not long after that his place was bombed and he moved out to Ealing."

Morris K. Jacobsen, 455 Beach 139 St., Rockaway, New York. " ... Just now I am completing the last part of my study of Spisula solidissima variations. I am doing the obesity index. Before I send it to the Nautilus tho' I would like to know more about Genes and transfer of accidental characteristics; maybe I can hit on ideas that will be really worthwhile.

I will probably be inducted into the armed forces by the end of this month, certainly by June. Therefore, I read the report about Glenn Webb in the Minutes with much interest. I am glad to see that with some ingenuity I might be able to carry on even under not the best of conditions."

S.G. Skinner, 630 Almond St., Long Beach 4, Calif. " The April Club Minutes at hand and find them very interesting. Accept my congratulations on being " bawled out" by the custodians of the " scientific record"; it at least gives you a standing as some one to be reckoned with even if they don't quite approve of what you have to say.

The second subject inspiring this little note is the pronunciation of Latin words (of which my ignorance is collosal); but I want to put forth a bit of early American history having to do with the Indian chief Powhattan; it was a long time ago; my teacher that term pronounced the name as "Po-whattan", the next year a new teacher said " Pow-hattan " was correct; later, about 25 years ago, we took a rubber-neck trip to Washington, D.C. where a big hotel bore the name " Powhattan"--- and they called it the " Poy-tan". So whats in a name."

Mr. Robert Moses, 42 Pembury Road, Tottenham, N 17, London, England. " For some time you have kindly sent me the Minutes of the Conch. Club of So. Calif. I very much appreciate these lists ... but I hope better times are in store for us before very long. Wishing you and your club the best of luck."

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We have at hand the April Bulletin of the Natural History Museum of Sann Diego. The multitudinous activities of this great institution under their present difficulties is really amazing. There certainly is a large group of sincere and active naturalists in the city of San Diego.

Family PECTINIDAE
Genus *Pecten* Muller,1776. Type : *Ostrea maxima* Linnaeus.
Subgenus *Pecten s.s.*

"Shell usually rather large,orbicular,moderately heavy, left valve rather flat or somewhat concave, right valve convex; the dorso-lateral wings or auricles subequal, the byssal sinus on the right anterior one shallow. The sculpture consists of rather heavy radial ribs, and finer riblets, which are crossed by exceedingly fine incremental lines, especially conspicuous on the left valve" Dall, Bartsch, Rehder.

It should be mentioned that somewhat different descriptive terms are used in discussions of this group, the monomyarians such as the Pectens and Oysters . The animal is at right angles to that occupied by dimyarian pelecypods. The foot emerges to one side. As a result the following terms apply. The ears become ventral and dorsal instead of anterior and posterior. The hinge line is anterior. The free ends of the valves are posterior. The byssus is always ventral. The right valve is the valve with the byssus on the right (and bears the byssal notch), the left is the valve with the byssus on the left.

The taxonomy of this group has been the subject of a great deal of dispute . Grant and Gale (Mem. San Diego Soc. Nat. Hist.,1931) maintain that the genotype should be *Pecten adscensionis* Osbeck,1765 and give a voluminous and interesting statement of their case for *Pecten* Osbeck,1765. Osbeck stated that his species was attached to a piece of coral. Grant and Gale drew the conclusion from this that his species must be a form similar to our *Hinnites giganteus* Gray, and therefore placed *Hinnites* in the synonomy of *Pecten s.s.* On the other hand *Ostrea maxima* is one of the group with a flat valve, a much different type of shell. The Pecten of Osbeck has been rejected by Dr. L.G. Hertlein (Calif. Acad. of Sciences, Vol. XXI) who gives the following references to authors who have discussed it and also rejected it:

Dall, W.H., Bull. Mus. Comp. Zool., vol. 43, no.6, 1908, p.400.
Iredale, T., Trans. New Zealand Inst., vol. 49, pt. 3, 1915, p. 194.
Winckworth, R., Jour. Conch. vol. 20, no. 2, 1934, p.51.

Dr. Joshua L. Baily Jr. (personal communication, April, 1944) states the opposition to the Grant and Gale theory as follows:" The difficulty with this action is that Osbeck's description is too painfully brief. Our *Pecten latiauratus* spins a byssus by which it attached itself to kelp. It may be that Osbeck's Pecten was merely fastened to the coral by a byssus, and may have been some form similar to our *P. latiauratus*. Also it is said that *P. irradians* of the Atlantic coast spins a byssus when young- though I have never seen such a specimen. Finally Hertlein has suggested that Osbeck's specimen may have been a dead shell to which the coral had fastened itself, in which case it might have been anything. I believe that Osbeck's publication of the name would have been sufficient to establish a type if it could be identified. If it is ever found it will then be necessary to revise the nomenclature of this family accordingly. Until then Osbeck's name is a nomen nudum."

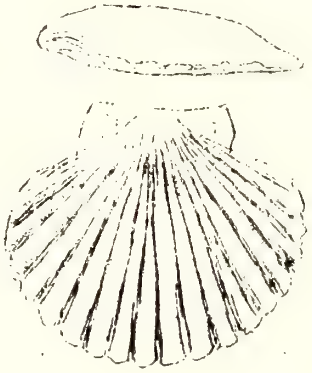
Dr. Baily mentions a further curious theory in regard to this disputed genotype:" In Dr. Fred Baker's card catalogue *Pecten islandicus* is indicated as type. This, if correct, would make *Pecten* and *Chlamys* identical, and the flat valved forms would have to be called *Janira*. But there is no evidence as to where Dr. Baker picked up this type designation. Certainly I have never come across it anywhere.

Also, Tryon, in his Structural and Systematic Conchology divided Pecten into many subgenera- to all of which he gave subgeneric names except one. This one is the group commonly called *Aequipecten*, and I think there can be no reasonable doubt that he considered it the true Pecten s.s. But again the evidence on which he based this conclusion is not known, so that we have no choice but to accept the group known as *Janira* with the flat valve to be the true *Pecten*. It is true that *Janira* has a different type, but this is so much like *Pecten* maximus that Janira cannot be given even subgeneric rank. The group called Pecten s.s. by Grant and Gale must retain the old name Hinnites."

Pecten (Pecten) diegensis Dall,1898. " Monterey to San Diego and the Cortez Bank" (Dall), to San Benito Islands (Hertlein).

Note: The southern species Pecten (Pecten) sericeus Hinds, 1844 is closely related. Dr. L.G. Hertlein states " It is probable that P. sericeus, a southern species, intergrades with the northern P. diegensis."

Collecting data: Dredged in abundance in 25 fath. off Redondo Beach, Calif. on gravel bottom, juvenile specimens living (½" to 2" diam.) but with them many dead valves ofapparently fresh adult specimens (3" to 4" diam.) and adult living specimens very rare. We suggest the possibility that the large adult specimens of this active mollusk may be capable of sufficient movement to actually escape from the trawl or dredge.?? The experience in dredging off Monterey was somewhat similar with dredgings from 25 to 40 fathoms on the shale bottom off Del Monte resulting in many juvenile specimens and a very few fine living adults 8/1940; good specimens dredged off Avalon, Catalina Island, Calif. in 35 fathoms 8/1937; one fine living specimen washed into Newport Bay in 1939; common in the Pleistocene deposits at Hilltop Quarry and Timm's Pt., San Pedro and also in the Del Rey Baldwin Hills deposit.(Burch).



Pecten s.s.

Subgenus Chlamys Bolten,1798. Type: Ostrea islandica Linnaeus (by sub. desig . Hermannsen 1846).

" Shell equivalved, of medium size, suborbicular or oval, moderately heavy, only moderately inflated, dorso-lateral wings subequal, with the anterior ones usually larger, byssal sinus under the right anterior conspicuous, often with a pectinate lower border. The sculpture consists of rather strong radial ribs with finer riblets, often beset with scales." Dall, Bartsch, Rehder.

Dr. A. Myra Keen " An Abridged Check List, 1937", Dall,Bartschand Rehder " Marine Mollusks of Hawaii",1938, and other recent authors have raised Chlamys to full generic standing.

Pecten (Chlamys) hericius hericius Gould, 1850. " Port Althorp, Alaska to San Diego" Dall.

Grant and Gale, 1931, place this species in the synonomy of Pecten hastatus Sowerby, 1843. However, we are disposed to think that they are distinct species and quote Dr. L.G. Hertlein's statement of the differences (Templeton Crocker Exp. Calif. Acad. Sciences, 1935), when writing of P. hastatus: " The right valve is characterized by about nine pairs of strongly individualized ribs which are ornamented by prominent spines. There are nine narrow, prominent spiny ribs on the left valve. The right valve of the northern species, hericius, is ornamented by fascicules of three spiny riblets which are nearly equal, although the central riblet is slightly more prominent and spiny; while in P. hastatus there is a central spiny rib, with from two to four small scaly riblets between the major rib and the central riblet of the interspace."

Collecting data: Off Monterey, Calif. in 10-20 fathoms in sand. Fine living specimens were taken yearsago by trawl fishermen but recent dredging has failed to locate the bed and has produced only a few dead valves (A. Smith); Tacoma, Wash. 15 fathoms (W.J. Eyerdam); off Keton Island, Puget Sound, Wash. (Murbarger); Craig, Alaska (George Willett); Vashton Island, Puget Sound (E. Fuller); specimens from Straits of Juan de Fucca with yellow on the umbones (Mrs. T.A. Burch); common in the Pleistocene of Hilltop Quarry, and Timm's Point deposits at San Pedro, Calif. (Burch).

Pecten (Chlamys) hericius pugetensis I.S. Oldroyd,1920.
" Craig,Prince of Wales Island,Alaska to Newport Bay, Calif." (Gregg.)

Dr. W.O. Gregg makes an excellent case for his contention that pugetensis is not a subspecies but a distinct species. In this connection read his article " Pecten pugetensis at Newport Bay, Calif." (Nautilus, vol. 51, p 118, April,1938). In addition to the article cited above, Dr. Gregg has written the following (personal communication, April,1944):

" The most southern record of Pecten pugetensis Oldroyd is Newport Bay, collected on rocks at very low tide on east side of entrance to bay, March, 1926. One specimen measuring 29.3 by 25.0; hinge line ,16.3 mm. For reasons given (Naut. 51:118) I do not consider it a subspecies of islandicus. Examine a specimen of pugetensis with a hand lens. Did you ever see any sculpturing like it on hastatus or hericius ? If so, then pugetensis is only deserving of subspecific rank. I have never seen anything suggestive of this microscopic sculpturing on either hastatus or hericius. If we wish to disregard this microscopic sculpturing (I do not see why we should as authorities have set up subgeneric and even generic distinctions on characters less distinct than this) it would seem that hastatus is the form which pugetensis most closely resembles. If we insist on lumping as Grant and Gale do we will have to make them subspecies of hastatus instead of hericius as the former has priority by about seven years.

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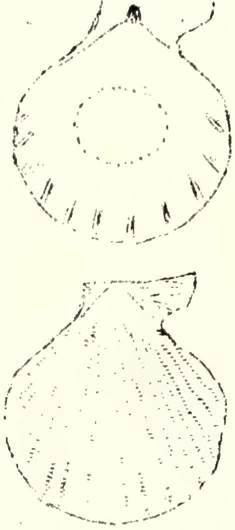
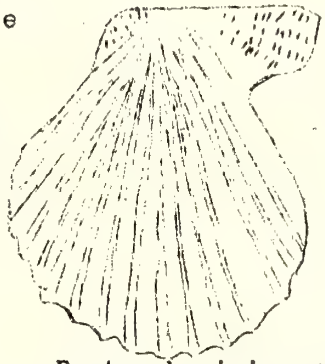
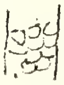

Chlamys





Pecten hericius pugetensis Oldroyd
(young specimen -off Redondo 25 fath.

In my opinion the microscopic sculpturing excludes pugetensis from being grouped subspecifically with hastatus and hericius unless there is at least a suggestion of this sculpturing in the two latter or intergrades of pugetensis are found in which this characteristic sculpturing is partially absent. In all the specimens I have examined I have failed to note any such evidence of intergradation."

Collecting data: Puget Sound, S.E. Alaska (many localities,)(G. Willett); Hinchbrook Island, Pr. Wm. Snd., Alaska (Norberg, July 1936); dredged off Monterey, Calif. in 40 fathoms on shale bottom, 8/1937-40, also dredged frequently off Redondo Beach, Calif. in 25 to 50 fathoms, spring and summer, 8/1939-41 not uncommon in the Pleistocene of Timm's Point, San Pedro, Calif. (Burch).

Pecten (Chlamys) hericius albidus Dall, 1906. " Aleutian Islands" (Dall). Type locality: Unalaska.

Pecten (Chlamys) hastatus Sowerby,1843. " Monterey to San Pedro,Calif." (Dall), and south to off Newport Bay (Burch); to " San Diego" (Grant and Gale).

Collecting data: Off Monterey, Calif. in 10-40 fathoms, in sand and on shale and corralines; fairly common (A. Smith); fine specimens of bright orange color off Monterey in 20 fathoms shale bottom 8/1940, not uncommon off Redondo Beach in 25 to 50 fathoms, off Avalon, Catalina Island, 1937, in 25 fathoms (Burch).

Pecten (Chlamys) hindsii hindsii Carpenter, 1864. " Bering Sea to San Diego" (Dall). Note: Grant and Gale, 1931, placed the subspecies navarchus in the synonymy of the typical. Mr. George Willett os the Los Angeles Museum agrees, and the consensus of opinion is so strong that we are listing Pecten (Chlamys) hindsii navarchus Dall, 1898 as identical with P. hindsii hindsii.

The source of the San Pedro and San Diego records for this far northern species is not known to any member of the club and are open to question.

Note: The sculpture between the ribs on P. hindsii, islandicus etc. seems to be so variable as to indicate that this method of differentiation is of little significance. This is the opinion of Mr. George Willett of the Los Angeles Museum who collected these species extensively in Alaska, and has been our experience in studying the small series in our collection.

Collecting data: Prince William Sound (Lewis); S.E. Alaska in many localities (G. Willett); Straits of Juan de Fucca in 50 fathoms (Eyerdam); specimens of yellow color from Straits of Juan de Fucca.

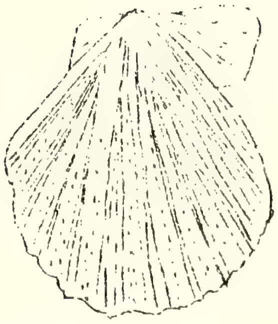
Pecten (Chlamys) hindsii jordani Arnold, 1903. (Mem. Calif. Acad. Sci. vol. 3, p. 111, pl. 12, figs 6,7, 1903). Type locality: " Pliocene of Deadman Island, San Pedro, Calif.". Recorded living " at various places with hindsii" (Grant and Gale). Collected living " Forrester Island, and Howkan, Alaska and in Puget Sound by George Willett of the Los Angeles Museum.

Grant and Gale, 1931, say of this species " This variety is intermediate between hindsii and kincaidi, and it is doubtful whether any of the distinctions are of significance. It has fewer, simpler ribs than the typical islandicus (Grant and Gale consider the entire group subspecies of P. islandicus) , and is small; it has fewer broader ribs, and is less elongate parallel to the hinge than hindsii; the ribs of kincaidi are narrower and do not bifurcate."

W.J. Eyerdam reports having taken the species at lat. 58, Alaska.

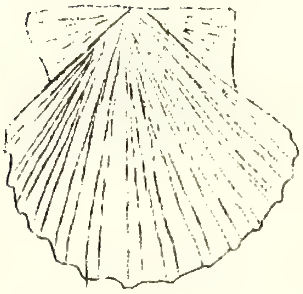
Pecten (Chlamys) hindsii kincaidi Oldroyd,1920. Type locality: Puget Sound. Dr. A. Myra Keen reports that MacKenzie Gordon has this variety from Portage Bay, Alaska (lat. 58).

Mr. George Willett places kincaidi in the synonymy of jordani, which is probably correct. Grant and Gale, 1931, say " This variety is distinguished by its small size and its few distant ribs."



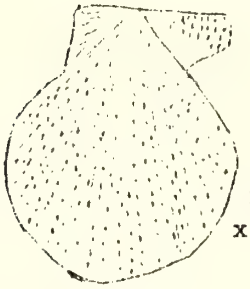
right valve
x 1

Pecten islandicus Muller
Alaska- Willett Coll.



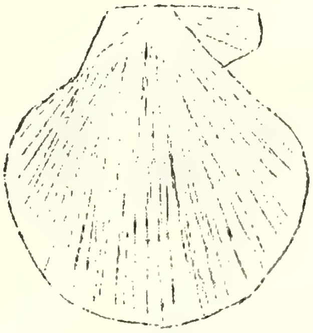
left valve
x 2

Pecten tumbezensis d' Orb.
Champemco, Guatemala 14f Strong Coll.



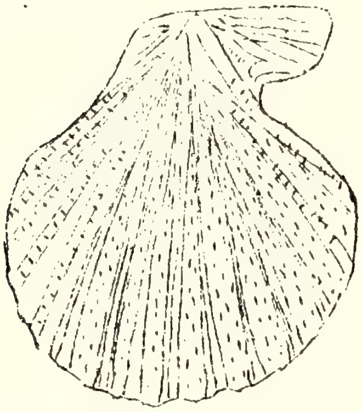
right valve
x 1

Pecten islandicus Muller
Gloucester, Mass. 30 f



right valve
x 1

Pecten hindsii Carpenter
Puget Sound



right valve
x 1

Pecten hastatus Sowerby
Monterey, Calif. 20 f shale

Pecten (Chlamys) islandicus Muller, 1776. " Arctic Ocean to Kamchatka and Puget Sound on the west, to Chesapeake Bay on the east" (Dall); Scandinavia and north Scotland (Wood) (Grant and Gale).

The consensus of opinion seems to be that islandicus is not of the Pacific coast fauna. Note by Mr. George Willett of the Los Angeles Museum " Probably not Pacific coast", and Dr. A. Myra Keen writes " Hertlein informs me he has never seen islandicus south of the Bering Sea".

Note: Grant and Gale, 1931, were disposed to make west coast species into varieties of east coast species. The consensus of opinion seems to reject this theory as artificial.

Pecten (Chlamys) beringianus Middendorff, 1849. " Bering Sea" (Dall); Umnak Id. and Aleutians (G. Willett).

This species is figured by Grant and Gale, 1931, who say of it " This species is easily distinguished by the few broad swollen ribs on the early part. Most of the specimens figured are immature or stunted. It may be, as Middendorff thought, a variety of islandicus, for it is very like the form jordani. In some respects it is closer to hastatus, but it lacks the spines and is covered with a peculiar cross-hatching".

Mr. George Willett suggests that Pacific coast records of islandicus are probably this species.

Pecten (Chlamys) lowei Hertlein, 1935. " Gulf of California; Galapagos Islands, ? Catalina Island, Calif." (Hertlein). (The Recent Pectinidae, Proc. Calif. Acad. of Sci., 1935) " One left valve is present from Loc. 25610) C.A.S.), said to have been dredged on the north side of Catalina Island, in 30 to 80 fathoms. There seems no reason to doubt this locality, although the range is longer than that of most west American Pectens".

Subgenus Patinopecten Dall, 1898. Type (by original desig.) Pecten caurinus Gould.

" Shell large, thin, sometimes of a somewhat pearly texture, having a circular outline and very low convexity, valves usually nearly equal, although at times one or the other may become nearly flat; radial sculpture consisting of distinct ribs without minor striation, sometimes with microscopic cross-hatching, ribs of the right valve comparatively broad and squarish, sometimes with a medial sulcus, those of the left valve narrow, often sharp, with intercalaries if the ribs of the right valve are sulcated; hinge line usually short, ears of almost equal length, byssal notch deep in the older species, more shallow in Recent species" Grant and Gale.

Pecten (Patinopecten) caurinus Gould, 1850. Range as given in note from Dr. A. Myra Keen : " The range is Wrangell, Alaska (lat. 57 not Wrangel I. (lat. 71) south to Humboldt Bay, California. The latter record was reported by Dr. H. McGinitie who dredged it there." Type locality: Puget Sound.

Dr. L.G. Hertlein, Calif. Acad. of Sciences, has published two articles in the Nautilus dealing with the range of this species- Nautilus, vol. 51, No. 4, 1938, p. 144 and vol. 54, No. 2, p. 68, 1940 in which Hertlein gives the range as " Channel Island, Orca Inlet, Cordova, Alaska to off Point Reyes, Calif."

Note: Many of us have specimens of Pecten yessoensis Jay from Japan. These shells have been imported extensively and sold for use as cooking dishes etc. Good specimens could be purchased for a few cents at the Fish Pier in San Francisco. Carpenter considered yessoensis a variety of caurinus,and they are so close that any amateur collector is in trouble if his labels are mixed.

Grant and Gale do not state the origin of the Williamson San Pedro record for this northern species. It sounds too illogical to consider unless it is based on a fossil. This species is not uncommon in the Pleistocene deposits of San Pedro, and even today it is possible to find winrows of shells washed in on the San Pedro beaches with fossil and recent shells mixed to cause confusion.

W.J. Eyerdam published a note in the Nautilus , vol. 47, No. 1, p. 36, 1933 on the record size of this species. Eyerdam's specimen was dredged outside of Wrangel Narrows, Alaska, in 1918 and measured 9 inches in length by $7\frac{1}{2}$ inches in width. The largest specimen in the National Museum in 1927 measured $6\frac{1}{2}$ inches.

Grant and Gale, 1931 give an excellent discussion of the possibility of the older name, Pecten (Patinopecten) propatulus Conrad, 1849 ultimately being satisfactorily identified as identical which would threaten the well known name caurinus.

Colledting data: Petersburg,Wrangell, and Craig, Alaska (G. Willett); not uncommon in the Pleistocene of Timm's Pt., San Pedro,Calif. (Burch); Humboldt Bay and Puget Sound (Sorensen).

Subgenus Leptopecten Verrill, 1897. Type (by original designation): Pecten monotimeris Conrad.

" Shell thin, small, of low convexity, approximately equivalved (except for the ears); sculptured typically with only a few low, broad folds, but on the older species and on the typical variety of P. latiauratus Conrad, where the relation to typical Aequipecten is more clearly shown, the folds revealing their true nature as more definite and more numerous ribs; hinge line long, some times as long or even longer than the shell, byssal notch deep, with prominent (but delicate) pectinidial teeth" (Grant and Gale).

Note from Dr. A. Myra Keen: " If you take Pecten as the sole genus of the coast, as Hertlein does, then Leptopecten would be a subgenus. If you start subdividing, as seems to be our tendency here at Stanford, then Leptopecten would either be a subgenus of Aequipecten or a genus in its own right. Take your choice."

Grant and Gale used it as a section of Aequipecten used as a subgenus of Pecten. Dr. Joshua L. Baily Jr. in " West Coast Shells" uses Aequipecten as subgenus of Pecten for the species involved. Hertlein uses Leptopecten as sub--genus of Pecten and we will follow this practice until more evidence is submitted.

Pecten (Leptopecten) latiauratus latiauratus Conrad, 1837. " Monterey,Calif. to Gulf of California (I.S. Oldroyd); San Francisco Bay, Calif. ? (Packard)" (Hertlein). Type locality: San Diego, Calif.

" An inspection of Conrad's original figures of latiauratus and monotimeris indicates that latiauratus has more squarely shaped ribs, a longer hinge line, and a cutely pointed ears. The longer hinge line and prominently lamellated inter--spaces distinguish the subspecies latiauratus delosi (Plate 19, fig. 10) from Conrad's species" (Hertlein).

However, Grant and Gale, 1931, place the variety, Pecten (Leptopecten) latiauratus delosi Arnold, 1906 in the synonymy of the typical. Mr. George Willett of the Los Angeles Museum agrees with Grant and Gale in placing delosi and also places the variety Pecten (Leptopecten) latiauratus fusicolus Dall, 1898, in the synonymy of the variety monotimeris. The consensus of opinion at present seems to favor the last conclusion.

Pecten (Leptopecten) latiauratus monotimeris Conrad, 1837. " Monterey, Calif. to Gulf of California" (Dall). Type locality: San Diego, Calif.

In the discussion of monotimeris Grant and Gale, 1931, say: " This variety lives in great abundance attached by its byssus to kelp. Its situs accounts entirely for its special characters. Mrs. I.S. Oldroyd has informed the writers that the normal variety although not so common, is found attached to worm tubes at low tide level near San Pedro. The forms described by Dall as fusicolus and by Arnold as cerritensis are but variations of this variety, having a smaller number of ribs. They are almost surely without significance. Intergradations of monotimeris with the typical variety are not at all rare"

Specimens dredged in vast numbers off Redondo Beach attached to gravel in from 15 to 25 fathoms seem to be typical latiauratus in every character; the varieties monotimeris etc. may be found in abundance attached to kelp floating close off shore. Therefore it seems logical to assume that all subspecies of latiauratus are but forms adjusted to a different habitat. (Burch).

Collecting data: To attempt to give a list of localities for this common species would be a waste of paper. It may be taken in great numbers in the following habitats: off shore kelp, eel grass, pilings, stones at minus tides, attached to the bottoms of boats, bait barges, floats etc. And as stated above the habitat of the typical form seems to be in deeper water and usually attached to stones and gravel.

Pecten (Leptopecten) paucicostatus Carpenter, 1864. " Catalina Island,Calif. to Gulf of California" (Dall). " Santa Barbara, Calif. to Gulf of Calif."(Strong " In Carpenter's description the species is listed from Santa Barbara (Jewett) and Santa Barbara Islands (Cooper). It has also been listed from Catalina. No recent collecting from local waters known to members of the club" (Strong).

Grant and Gale, 1931, place this species under the subgenus Aequipecten and place it in the synonymy of Pecten tumbezensis d' Orbigny, 1847. Hertlein places in the subgenus Leptopecten , and also places in the synonymy of tumbezensis.

Pecten (Leptopecten) tumbezensis d' Orbigny, 1847. " Gulf of California to Peru Santa Barbara, Calif. ?" The California record of this species is doubtful. " Arnold states of this species, " A pair of valves in the U.S. National Museum from U.S. Fish Commission Sta. No. 2840, Santa Barbara Islands, is labelled P. tumbezensis d' Orb. This shell is probably an albino variety of P. latiauratus having just a touch of color on the interior of the posterior ear of the left valve. The true P. tumbezensis is from the Peruvian part of the South American coast." The Santa Barbara Channel listing for this species seems to be based entirely on this specimen" (Strong).

This species is distinguished from P. latiauratus : "... has fewer ribs and the tops are more broadly rounded.; by its heavier shell and stronger ribs." Grant and Gale. " The left valve usually shows a sprinkling of light bluish dots on a slate colored or brownish background" (Hertlein).

Subgenus Plagioctenium Dall, 1898. Type (by orig. desig.): Pecten ventricosus Sowerby.

" Shell like that of Aequipecten s.s. but usually with stronger, squarer ribs, on which the radial striations are faint or obsolete; valves often more convex; hinge line long, ears nearly equal" (Grant and Gale, 1931).

Subgenus Aequipecten Fischer, 1886. Type (by monotypy): Ostrea opercularis L.

" Shell of moderate size and thickness, of circular outline; ribs uniform, distinct, not bifurcating, sometimes with finely imbricated radial striations; ears usually equal, the byssal notch of moderate depth, ctenolium usually present but small" (Grant and Gale, 1931).

Note from Dr. A. Myra Keen: " As Grant and Gale point out, Aequipecten is prior to Plagioctenium , and as far as I can see is doubtfully separable from it. I have abandoned use of the latter in our collections, and I now think I was wrong in subsuming the species under Chlamys in the Abridges List."

However, Dall in Bulletin 112 used Plagioctenium and this practice has been followed by Hertlein, Willett and others. Therefore, we will continue at present.

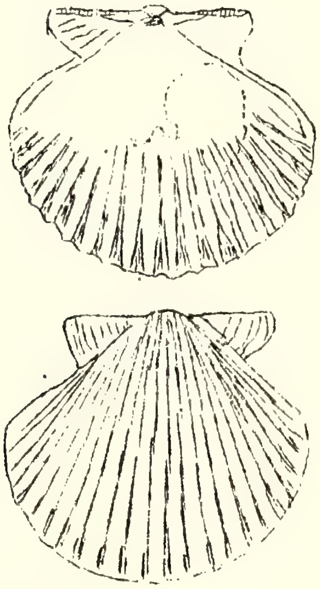
Pecten (Plagioctenium) circularis Sowerby, 1835. " Monterey, Calif. to Payta, Peru" (Dall). Grant and Gale consider this species a variety of gibbus as " Pecten (Aequipecten) gibbus Linnaeus variety circularis Sowerby.

" Although the typical Gulf of California form is listed from the coast no member of the club has specimens that can be classed as coming under it" (Strong).

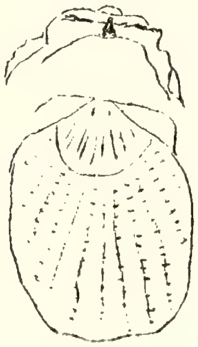
Pecten (Plagioctenium) circularis aequisulcatus Carpenter, 1865. " Santa Barbara, Calif. to cape San Lucas, Lower Calif. " (Dall). Type locality: Santa Barbara,

This is the common species of the California coast. The only distinction from typical circularis seems to be that aequisulcatus attains a larger size when adult, is less convex, the shell is thinner with narrower ribs and more subdued coloration. It seems to be difficult if not impossible to separate the young of typical from the young of the variety. Specimens taken from as far north as Todos Santos Bay produce adult specimens that if not typical circularis at least show intergrades toward the typical. A logical inference would seem to be that aequisulcatus is but a cooler water form of circularis. (Burch).

The bathymetric range of this species is somewhat interesting. It has been taken in abundance at the far upper end of many of the sloughs such as Newport Bay, Anaheim Bay, Mugu etc. and on the other side it has been brought up in dredge hauls from as deep as 25 fathoms and is very common in shallow depths off shore. (Burch). Allyn Smith writes that the species is not found in Monterey Bay.



Plagioctenium



Hinnites

Genus Hinnites Defrance, 1821. Type: Hinnites cortezi Defrance.
" Shell oval, irregular, inequivalve, subequilateral, close, adhering by the right valve; eared irregularly; hinge without teeth; ligament thick, in a deep, narrow pit. Differs from Pecten in its irregular growth, and in being adherent. " (Tryon S.S. Conch.)

Hinnites giganteus Gray, 1825. " Aleutian Islands to Magdalena Bay, Lower Calif. (Dall).

Hoyt Rodney Gale (Trans. San Diego Soc. Nat. Hist., vol. V, No. 9, pp 91-94, 1928) made an excellent case against the genus Hinnites. This was later elaborated by Grant and Gale, (Mem. San Diego Soc. Nat. Hist., vol.1, 1931). Gale rejected Hinnites as a genus and described Pecten multirugosus Gale, 1928 as a new name for the above species. Inasmuch as this is still a much mooted question with the burden of proof upon those making the changes, we shall follow the old name until all of the evidence is in. It would seem that if we retain Hinnites, there would be no question about also retaining the specific name giganteus . However, Dr. A. Myra Keen writes: " The name combination Lima gigantea was preoccupied by a L. gigantea (Sowerby),1814. Therefore, Gale's new name multirugosus is valid whether or not one accepts the genus Hinnites. After looking over the original figure of the genotype and studying material in our collection I continue to be inclined to accept Hinnites as valid." Dr. Joshua L. Baily Jr. states the case as follows:" In 1812 Sowerby described Plagiostoma gigantea, and in 1825 Gray described Lima gigantea , the latter being our Hinnites giganteus. These names did not at first conflict, being in separate genera. In 1826 Gray took the species out of Lima and put it into Hinnita - a genus which is the same as Hinnites, according to Grant and Gale. Then someone decided that Plagiostoma and Lima were the same, and that therefore Sowerby's species preempted the name, being older. But Opinion #83 does not exactly cover the case. Grant and Gale do not tell when Plagiostoma was made equal to Lima. If this were done previous to 1826, there would have been two Lima gigantea , but when the two species did not simultaneously have the same name it is uncertain how thw ruling should be interpreted. We must know when Plagiostoma was first synonymized with Lima. Second, we must know why it was synonymyzed - whether it has the same type, or merely whether it is defined the same way. And third we must know whether the referring of Gray's species to the wrong genus has any bearing on the case. This is a matter which the International Commission now has under consideration. The rule is commonly interpreted to apply to cases in which a species is removed from a genus because the genus has been divided, and not to a species erroneously referred to a genus that it never belonged to."

Therefore, we propose to retain the old name until the International Commission settles the matter.

W.J. Eyerdam published a note in the Nautilus, vol. 47, No. 1, p. 36, 1933 on the record size of this species. Eyerdam's specimen came from off the San Juan Islands, in 1918, and a lower valve measured 8 3/4 inches in length by 6½ inches in width.

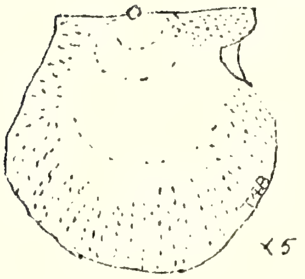
The bathymetric range of this species is of some interest. It is very common off Redondo Beach on gravel bottom down to at least 25 fathoms, ranging in to the pier pilings. An occasional specimen is dredged that seems to have become fully adult without having succeeded in attaching itself to anything. The result is a smoother somewhat convex lower valve. It is a common species the length of the coast being found at low tides with the adult specimens solidly cemented to rocks, pilings, breakwaters etc. and usually distorted to fit the surroundings. Young specimens are regular in form and sculpture.

Subgenus Propeamussium De Gregorio, 1884. Type (by monotypy) Pecten (Propeamussium) ceciliae De Gregorio.

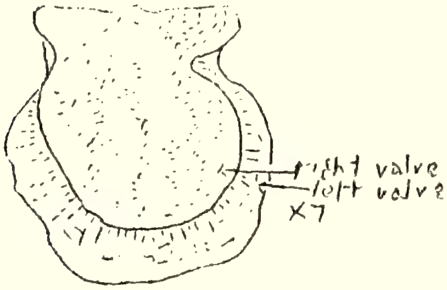
" Shell rather small, thin, orbicular, laterally compressed, white or translucent. The left valve may be smooth or with fine radial or both radial and concentric sculpture; right valve somewhat flatter, with concentric sculpture, appressed near the margin to the left valve, resulting in a slight marginal concavity. Internally there are fine radial riblets, which are usually visable through the translucent shell."

Pecten (Propeamussium) alaskensis Dall, 1871. " Pribiloff Islands, Bering Sea, and southward to the Santa Barbara Islands, Calif. Japan." (Grant and Gale). Type locality: Alaska. Grant and Gale, 1931, extend the range to Magdalena Bay, Lower Calif. " usually in deep water".

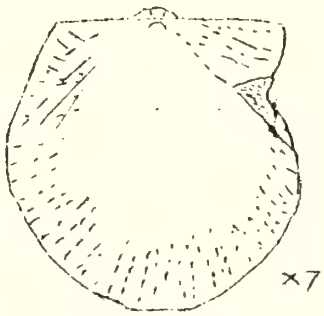
Collecting data: Forrester Island, Ketchikan, Alaska (G. Willett); Prince William Sd., Alaska (Lewis.)



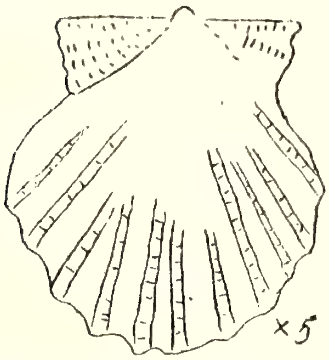
Pecten vancouverensis Whiteaves
Redondo Beach, Calif. 50 fathoms
Note by Thomas A. Burch who drew the above figure:
" I am sorry that I cannot do justice to the fine
sculpture on this shell. Note the small embryonic
whorl at the top."



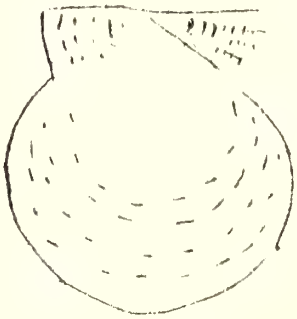
Pecten catalinensis Willett
Redondo Beach, Calif. 75 fathoms
Note that the left valve is much larger
than the right and extends beyond.



Pecten randolphi Dall
Hood Canal 30 fathoms



Left valve



Right valve

Pecten alaskensis Dall

Pecten alaskensis Dall

Forrester Island, Alaska 60 fathoms
Willett collection.

Pecten (Propeamusium) davidsoni Dall, 1897. " Davidson and Bowers Banks, Bering Sea" (Dall).
Dall in Bulletin 112 listed P. davidsoni with the group under Pseudamusium. Grant and Gale, 1931 suggest the species be assigned to Propeamusium " has much the same shape; but it has fewer and stronger external ribs on the left valve, and after it is a little more than half grown it develops ribs on the outside of the right valve also." Dr. L.G. Hertlein of the California Academy of Sciences (personal communication, May 12, 1944) says " As to davidsoni, it does not have the appearance of a Delectopecten but more like that of Propeamusium as suggested by Grant and Gale. The original description did not mention any internal ribs but it appears that some species in this subgenus develop internal ribs much later than others and Dall's type was only 14.7 mm. in altitude. The general resemblance to the species sayanus Dall from the Atlantic would seem additional evidence that davidsoni may belong to Propeamusium.

Subgenus Delectopecten Stewart,1930. Type(orig. desig.): Pecten (Pseudamusium) vancouverensis Whiteaves. (Acad. Nat. Sci. Phil., Special Pub. No.3,1930). No detailed description but the following remarks:"In not having the posterior ear differentiated, Delectopecten includes a group of small forms now living in the N.E. Pacific which have been classed as " Pseudamusium" by Dall..."

An important reference in making a study of this group is : Woodring " Lower Pliocene Mollusks and Echinoids from the Los Angeles Basin,California", (U.S. Geol. Survey Prof. Paper 190, 1938).

The discussion of this group seems to hinge on the identity of the type of Pseudamusium involving several different views. Pseudamusium is based on an Atlantic species and is rejected for our species by both Hertlein and Woodring. Dr. L.G. Hertlein (personal communication, May 12,1944) advises " Hyalopecten Verrill is based on H. undatus Verrill and is quite similar to the west coast mud Pectens but there seems to be some difference in detail of shape and ears. Anyway it is based on an east coast species and may or may not be applicable here. Delectopecten which is based on the west American form vancouverensis gives us a subgeneric name which we can safely use unless it can be shown without doubt that some other name is available for the species occuring here. I am in favor of assigning to it, arces, bistriatum,incongruum, randolphi and subspecies tillamookensis and vancouverensis. As to tillamookensis, I have not seen specimens and unless you have information to the contrary I should think it should be left as a subspecies of randolphi." Woodring in the paper referred to above accepts Hyalopecten Verrill and makes Delectopecten a subgenus of Hyalopecten. Dr. A. Myra Keen of Stanford University writes " After studying the various genotypes, Dr. Schenck and I came to the conclusion that it is simplest to consider Delectopecten a genus."

If Verrill's analysis of Pseudamusium is correct, then our species should not be included in that subgenus. Therefore we choose to use Delectopecten as a subgenus of Pecten.

Pecten (Delectopecten) arces Dall,1913. (Proc. U.S.N.M. Vol. 45,pp 592-3, 1913). " Off Santa Barbara, Calif. in over 500 fathoms, muddy bottom, Cat. No. 267169,U.S.N.M."

Dall omitted this from his list in Bulletin 112. Woodring places it in the synonymy of tillamookensis.

Pecten(Delectopecten) randolphi Dall, 1897. " Bering Sea to Guaymas,Mexico" (Dall). " to Cape Blanco, 225-1064 fms." (Woodring).

Grant and Gale place in synonymy of P. pedroanus Trask.

Collecting data: Not uncommon in dredgings from 50 to 75 fathoms off Redondo Beach, usually listed as from mud but in proximity to rocky bottom. Has been taken from holdfasts of deep water gorgonians.(Burch); Catalina Id. (40f (Willett); Hoods Canal,Wash. attached to apertures of worm tubes(Kincaid).

Pecten (Delectopecten) randolphi tillamookensis Arnold, 1906. " Pribiloff Islands, Bering Sea to San Diego, Calif." (Dall). Type locality: off Tillamook, Oregon in 786 fathoms. This is considered to be a sculptured variety of randolphi as described originally by Arnold. None of the members of the club report having seen specimens.

Pecten(Delectopecten) vancouverensis Whiteaves, 1893. " Bering Sea to San Diego, Calif." (Dall). Type locality: Forward Inlet, Quatsino Sound, Vancouver Island, depth 10 to 20 fathoms. There are two very good figures of this shell in Oldroyd.

Collecting data: S.E. Alaska, Redondo Beach, Catalina Island in 30-50 fathoms (G. Willett); not uncommon in dredgings from 50 to 75 fathoms off Redondo Beach usually listed as from mud, but has been taken attached to the holdfasts of deep water gorgonians.

Pecten (Delectopecten) bistriatus Dall, 1916. " Off San Diego, Calif. in 822 fathoms" (Dall).

This species and the species incongruus Dall were described and not figured by Dall. So far as we have been able to determine these species have not been figured anywhere. None of the members of the club report having seen specimens and they are placed in this subgenus tentatively.

Pecten (Delectopecten) incongruus Dall, 1916. " Off San Diego, Calif. in 684 fathoms" (Dall).

Pecten binominatus Hanna, 1924. " Dolphin and Union Strait, Arctic Ocean"(Dall Bulletin 112 lists Pecten (Pseudamusium) andersoni Dall, 1918, but the name andersoni was preoccupied by Pecten (Plagioctenium) andersoni Arnold, 1906. Hanna gave the species the new name listed above " Rectifications of Nomenclature", Proc. Cal. Acad. Sci. Ser. 4, Vol. 13, p. 175, 1924.

Note- This is another unfigured species with the position something of a mystery.

Subgenus Cyclopecten Verrill, 1899. Trans. Conn. Acad. Arts and Sci., 1899-1900. Type: P. pustulosus Verrill (by original designation).

" The species in this group have usually been referred to Pseudamusium, but they differ widely from the typical form of that group, such as P, exoticum, P. dispar, etc. in which the valves are of nearly equal size, with simple edges that come evenly together without flexure of the lower one, and in which the auricles are small and nearly equal" (Verrill).

Pecten (Cyclopecten) catalinensis Willett, 1931. (Nautilus- Vol. XLV, No. 2, Oct. 1931). Type locality: " 100 fathoms off White's Landing, north side of Catalina Island, Calif."

Collecting data: While Mr. Willett described this species from a few specimens it has been dredged in great numbers off Redondo Beach, Calif. in 75 to 100 fathoms, mud bottom. (Burch).

Pecten whiteavesi Dall. This name is added for the members who love a mystery. A note from Dr. A. Myra Keen about this name follows: " We have specimens from 413 fathoms off San Diego-- a beautiful and fairly large, paper thin species. It is not cited in Bulletin 112; Grant and Gale do not mention it, but Orcutt in " Molluscan World" cites the name."

Family LIMIDAE

Genus Lima Bruguiere, 1797. Type: Ostrea lima Linnaeus (by tautonomy,Lamarck) " Shell equivalve, compressed, obliquely oval; anterior side straight, gaping posterior rounded, usually close; umbones apart, eared; valves white, smooth, punctate-striate, or radiately ribbed and imbricated; there is uaually a thin brownish epidermis; hinge area triangular, cartilage pit cebtral; adductor impression lateral, large, double; pedal scars two,small." (Tryon. S.S. Conch.)

Subgenus Mantellum Bolten,1798. Type: M. inflata Chemnitz.

" Shell obliquely oval, thin, ventricose, anterior side widely gaping; submargins not impressed; hinge margin oblique; resilifer central, projecting into the cavity of the shell." (Limaria Link, 1807).

Lima (Mantellum) dehiscens Conrad, 1837. " Monterey, Calif. to Acapulco, Mexico" (Dall). The type locality of this species is Fayal Island, Azores. There is reason to question the distance involved in the range of this shell. Our common Pacific coast species is very close to forms studied from the Atlantic such as Lima hians Gmelin from Florida, Bahamas etc. We have one set sent us by Mr. Paul McGinty dredged 150 ft. off Palm Beach,Florida and labelled L. dehiscens. A comparison of these shells with specimens from this coast show small but unmistakable differences in the hinge and slight differences in the sculpture and shape. It would seem that they should not both be dehiscens. However, there must be some difficulties in determining this matter. We have a note stating that the holotype is in the Philadelphia Academy. A study of it should be in order.

Collecting data: As a free swimming form this is one of the most beautiful of living things. First glance gives the impression of a bright rose colored nudibranch. It is common in kelp holdfasts, frequently washed ashore, but the bathymetric range is interesting having been dredged living from as deep as 25 fathoms off Redondo Beach,Catalina Island and Monterey.(Burch).

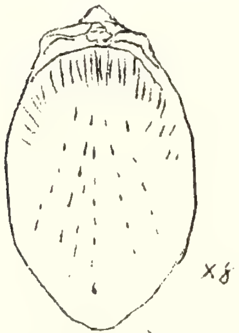
Subgenus Limatula Wood, 1839. Type: L. subauriculata Montagu 1808.

" Valves closed, equilateral, more or less distinctly mesially sulcate; sculpture radial".

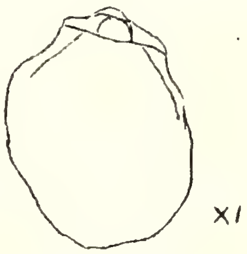
Lima (Limatula) attenuata Dall, 1916. " Southern Bering Sea, the Aleutian Islands and eastward to the Shumagin Islands, Alaska" (Dall).

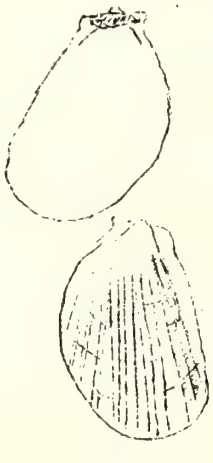
Lima (Limatula) subauriculata Montagu,1808. " Forrester Island,Alaska(Willett) to San Quentin Bay, Lower Calif. (Dall). The species was reported by W.J. Eyerdam (Nautilus, vol. 38, p. 24) at Drier Bay,Prince Wm. Sound. This is another of those circumboreal question marks. Maxwell Smith " East Coast Shells gives the range on that side " North Atlantic; Labrador to Porto Rico" and states " It has also been taken on the British Coast."

Collecting data: Forrester Id., Ketchikan,Alaska; Catalina Id. (G.Willett dredged in 20 fathoms off Monterey, Calif. on shale bottom, 25 fathoms off Avalon, Catalina Id., and common in 15 to 25 fathoms off Redondo Beach on sand bottom. (Burch).



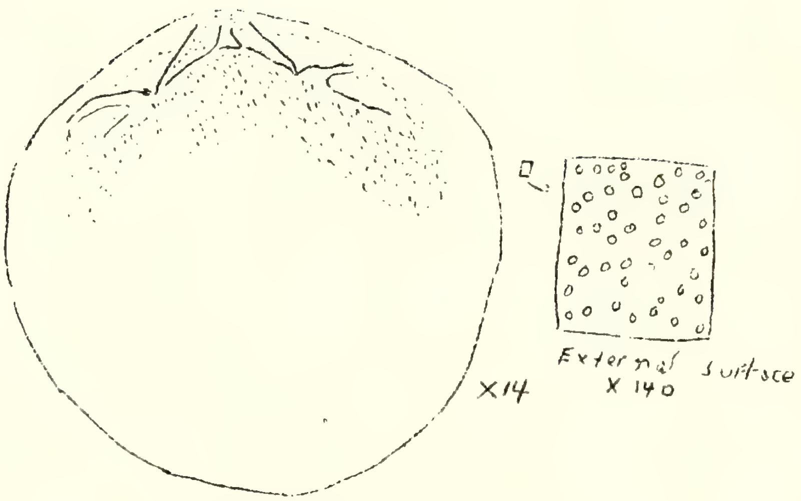
Lima (Limatula)subauriculata
Malaga Cove, 10 fath. sand, 1916.





Lima

Genus and species: Whatsit.



Note from Thomas A. Burch " While sorting through some shells to draw a Pecten vancouverensis Whiteaves from material dredged off Redondo Beach, Calif. in 50 fathoms mud, I came across a single valve of a small clam that I have never seen before and have been unable to identify. It is about 5 mm. in diameter and the external surface is covered by minute pustules. Internally there are two teeth on each side as shown in the above drawing. I have no idea what the other valve is like."

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The American Malacological Union has delivered the " News Bulletin and Annual Report" 1943. We are pleased to have the membership list revised to January, 1944 and to learn that 23 new members have been added to the Union. Membership in the American Malacological Union is open to anyone interested in the study or collection of shells. The annual dues are one dollar. There is no initiation fee. For further information address the financial secretary, Mrs. Harold R. Robertson, 136 Buffum Street, Buffalo, N.Y.

Mrs. Robertson is deserving of congratulation for the preparation of this excellent report.

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California Fish and Game, Vol. 30, No. 2, April, 1944 has been received. The issue as usual contains many articles of interest but perhaps the only paper touching the interests of the conchologist is " The bottom fauna of Blue Lake, Calif." by A.J. Calhoun.

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The May Bulletin of the Natural History Museum of San Diego is at hand. We note among the many new accessions an item " 81 shells (39 species)".

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Wm. G. Fargo has returned to his home from Pass-a-Grille Beach, Fla. and his present address is 506 Union St., Jackson, Mich.

Mr. and Mrs. David Hanson, W 1118 Indiana, Spokane 12, Washington. We regret that our friends and fellow members, the Hansons have moved so far away, but wish them the best and hope to hear from them often.

Mrs. Edward M. Johnson, Box 444, Falmouth, Mass. " I was pleased to receive a copy of the Minutes for March. I am grateful to you for publishing my name as one wishing exchanges. I made several very successful ones as a result. I am enclosing one dollar toward expenses of Minutes and would like to receive it when you have ex tra copies."

Dr. S.F. Light and E. Kozloff, Dept. of Zoology, University of California, Berkeley 4, Calif. We are honored to add these names to our mailing list.

We have just added a new book to our library that has been published since the war. It is " The New Zealand Recent and Fossil Mollusca of the Family Turridae" by A.W.B. Powell, Bulletin of the Auckland Institute and Museum, No. 2, 1942. This seems to be a very fine work of 188 pages and 14 pages of plates, and a word about those plates. We had better take some lessons from our New Zealand cousins. These figures are definitely super perfect. Too many of our recent figures leave most of it to the student's immagination.

We also received two other books from New Zealand that while not new are well worth having and are still available. " Brachiopod Morphology and Genera" by J. Allan Thomson, bound volume of 340 pages and the " Manual of the New Zealand Mollusca" by F.W. Hutton, 1880, 224 pages. Heretofore we have been depending entirely upon Sutter's volumes and Powell's check list.

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Mrs. Lillias F. Cockerill, Sanibel, Florida sends beautiful material in exchange and is interested in exchanging particularly for Pacific and Indo-Pacific.

Mr. S.L. Davidson, 33 Mont le Grand Rd., Mt. Eden, S.2, Auckland, New Zealand writes that he is making steady improvement in his health although still in the hospital. He is interested in exchanging books and literature.

Mr. C.R. Mahaffey, 276 30th St., San Francisco 14, Calif. An interesting line from his letter follows " I went to the Isla de Venados (Deer Island) off Mazatlan, Mexico. In about 2 hours I filled a 10 gal. oil case with small shells. Later we sorted out over 90 varieties."

Mr. Charles D. Nelson, Davis Technical High School, Grand Rapids, Mich. writes that through mention in these minutes he has made several very successful exchanges. Nelson sends out fine material and anyone interested in fresh water species in particular will do well to correspond with him. We are, of course, pleased to have his comment along with a host of others in the same line " Herewith consider this a vote of confidence in the way you are conducting your little publication. You are doing a swell job so let the scientific recorders bluster."

Miss Ruth E. Coats, 702 East First St., Tillamook, Oregon. " Since it has been quite some time since I have donated towards defraying the cost of material and postage of the " Minutes of the Conchological Club of So. Calif.," I am enclosing $2.00. Although Tillamook is a very interesting collecting ground, I find that I am rather isolated from other people interested in shells and with gas rationing my collecting tours are limited. At present I am staying at home and revising and catalogueing my collection. Wishing the Conchological Club of So. Calif. the best of luck, I am."

We would be very pleased if Miss Coats as well as other members living in localities about which most of us know little would write in their collecting data and experience in the groups as we take them up for study. For example this coming month we are working on the Mytilidaeto be followed in June by Periplomatidae,Thracidae,Pandoridae,Lyonsidae and Poromyacidae.

Professor Louis Brand, University of Cincinnati, Cincinnati, Ohio is interested in exchanges particularly of fine material in certain groups such as Pecten and Murex. We are flattered to have from a man of his standing a financial contribution as well as the following note " Don't let the professionals discourage you in the fine work you are doing for conchology .."

Dr. John Oughton, Royal Ontario Museum of Zoology, Queen's Park at Bloor St., Toronto, Ont. " Mark me down for a vote of confidence. Your Minutes ably fill a niche in conchology. Please continue to hew to your own broad lines and let the quibbles fall where they may."

Mr. Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle 5, Wash. has some very rare and fine material from the Aleutian Islands and other northern points for exchange. We are indebted to him for his collecting data on the groups we have been studying. Eyerdam also has some fine material from the Solomon Islands for exchange.

Minutes of the Long Beach Shell Club

The Long Beach Shell Club met in the childrens room of the Main Long Beach Public Library, May 14, 1944. Mr. Ralph Bormann, the president called the meeting to order. Seventeen members and three visitors were present.

A vote of thanks was given the members who served on the committee that arranged the exhibits for the Public School Week. To Mrs. Ralph Bormann and Miss Ruth Eaton for the display in the public library and to Miss Julia Ellen Rogers and Mrs. Jean Wilkins for the department store displays.

The secretary was instructed to write a letter of appreciation to Mr. Fred Kraft Jr. of the Press Telegram and to Mr. Walter Case and Mr. Norman Hartford of the Long Beach Sun for the fine publicity given the exhibits and the recognition of the work of the shell club.

Mr. Ulrich reported the outstanding work of the young student, Jean Bruck of Napa, California, formerly of the club here, who has specialized in the study of fossils particularly of the Coalinga section.

Mr. Ulrich gave the principal talk, his subject being Volutidae. He illustrated his talk with many beautiful specimens from his collection.

Mr. Ulrich brought a large collection of classified specimens to which the members were priviledged to help themselves.

Mrs. Inez Eastman showed a most interesting collection her Merchant Marine son had brought from the south Pacific.

After announcing that Dr. Howard R. Hill of the Los Angeles Museum is to be the speaker for the June meeting, Mr. Bormann adjourned the meeting.

Grace Stillwell- Secretary.

The next meeting of the Long Beach Shell Club will be held in the Childrens Room of the Long Beach Public Library, Sunday afternoon, June 11. The meetings are held the second Sunday afternoon of each month at 2:30 P.M. and all persons interested in shells are welcome.

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Dr. Hazel A. Wentworth, 1823 East First St., Long Beach, Calif. is a new member of the Long Beach Shell Club.

Mrs. Inez Eastman, 130 Elm Ave., Long Beach, Calif. We also offer our sincere welcome to Mrs. Eastman to the ranks of shell collectors.

Miss Cynthia Mason, 3032 East Third St., Long Beach, Calif. Miss Mason's friends will please note her change of address.

Miss Ruth Eaton, 326 W. 5th St., Long Beach 2, Calif. This is a new address for Miss Eaton.

Mr. W.J. Bower, 26 Woodland Ave., Bronxville, New York. " I am heartily in accord with the position you take in the April Minutes, and as to what you have to say about the so called scientific record. I am returning to Bronxville in a few days, so please change my address".

Ted Dranga, 4340 S.W. 14th St., Miami 34, Florida. " I am mailing you a few specimens for your collection with my compliments. You are doing a nice job sending out thatrecord of the meetings of the California club and I much enjoy reading them and the accompanying notes."

The shalls arrived in fine condition,Ted, and are greatly appreciated. They were practically all entirely new to our collection and beautiful shells.

Ted says he has some rather unusual necklaces and bracelets made of various colors of Polymita picta. Says they are made in Cuba. A necklace of Polymita should really be something worth seeing. Ted says he also has fine specimens of Polymita suitable for collections.

Mr. and Mrs. E.W. Birstler, R 1, Box 71, Vista, Calif. We welcome all shell people and especially friends of our members, Mr. and Mrs. W.P. Cook of San Diego. Which reminds us again,

Mr. and Mrs. W.P. Cook, 2966 Union St., San Diego 7, Calif. We are trying to think of a shell fine enough to register our appreciation of the large box of delicious Avocados recently received.

We wish to try to express our sincere appreciation for the splendid cooperation and assistance in our problems to our member, Allyn G. Smith. In addition to a great deal of other information Allyn's last letter contains two excellent suggestions. It is expected that our president, Mrs. E.P. Chace, will appoint proper committees to take care of both of the following matters.

" On the subject of Pecten adacensionis Osbeck, the type of the genus, as you know there is some doubt that it might have been a Spondylus, which leaves the whole situation in doubt. One way to help clear the doubt would be to get pectens, if possible, from the type locality. Ascension Island is now an important stopping point for American planes ferrying to North Africa. The National Geographic for May has a most interesting article on it. Why not write the commanding officer there, tell him the facts and how important a scientific question it is, and ask him, pretty please, would he post the letter on the bulletin board. Maybe some G.I. with time on his hands might get interested enough to go look for some scallop shells- as near as he could find them to the Shell Oil Company's emblem- and send them to you. It's just a thought."

" Here's another idea that will really start something among the members of the Southern Calif Club, unless I miss my guess. This would be to initiate a sort of contest on who has the biggest whatsit whattamatorum. Appoint a committee, draw up rules for proper measurement, etc.and then gradually work up a list of species showing accurate measurements (max. diam. and max. height or length) to the nearest .1 mm., the locality (which must be exact), the collector, the present owner and his accession or collection number. Pathologic specimens would be ruled out by the committee who would also be the judge of the measurements. It would be of real scientific value and perhaps would stir up some competition. Just to start the ball rolling, I believe I have the grand daddy of all Polinices lewisii, taken by fishermen in San Pedro Bay years ago and obtained from Mrs. Baldridge's collection. It measures : height, 155.4 mm.; max. diam., 125.0 mm. (measurements taken along and perpendicular to the axid) . It is No. 5180 A.G.S. If anybody can beat this for size, let him speak up."

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Charles Robert Wright, Ph M 1/c, U.S.S. Change (AM -159), c/o Fleet P.O., San Francisco, California. " Dear John: I forgot to tell you the name of my ship. H Here is my full address. I have done some shell collecting and hope to have a good collection made up by the time I start back home. It certainly is interesting to study coral reefs and its association by using a dive mask and swim fins. I hope to use my dredge and drop net when we are anchored in clear water. I found out if one is going to be out collecting even under water, one must have full length pants and shirt. I got my legs nicely sunburned."

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We enjoyed and appreciated a letter from Dr. Calvin Goodrich of the University of Michigan. Among other things pertinent to our recent discussions of publications Dr. Goodrich says " ... I take it that you think mimeographed publication does not count. That is only a sort of gentleman's agreement. There is no reason to believe that it will last. An author, by insisting on its recognition as adequate publication, will get enough people behind him to have it included with descriptions set up on a Merganthaler machine. And why not? No one, so far as I know, balked over Marsh's newspaper conchology. You have to keep in mind that you people are engaged, even if you don't think so, in elevating mimeographing to the level of any other form of printing.And then, if we have prolomged hard times,, the pundits themselves will resort to it. And the agreement, forthwith, will go by the board. ..... I might add that your publication is great stuff and, moreover, a rebuke to people, the dead as well as the quick, for not having done the same thing."

Extention of Range of Bernardina bakeri Dall.

William K. Emerson, 2435 Bancroft St., San Diego 2, Calif. writes " I have found 4 both valves and 1 single valve of the minute bivalve, Bernardina bakeri Dall., in sand taken from the end of Point Loma. "

Note by John Burch: Dall's Bulletin 112 lists this species from " Coronado Islands", the type locality. We have sets ranging as far south as Magdalena Bay, Lower California, Mexico but do not know how far south it ranges. Dr. Fred Baker was always very proud of this little species and often made the remark that while he had in his long life of collecting taken many new species, Bernardina was the only new genus he had ever taken.

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Dr. W.O. Gregg, 2200 S. Harvard Blvd., Los Angeles 7, Calif. sends the following review of new publications:

" A recent publication which has been brought to my attention: " The Amnicolidae of Michigan: Distribution,Ecology and Taxonomy" by Elmer G. Berry, 68 pages, 9 plates, 10 text figures, 10 distributional maps. Miscellaneous Publication No. 57, Museum of Zoology, University of Michigan, May 28, 1943. The plates are unusually good. A method of narcotizing animals anabling one to study and preserve the fully extended animal should prove of value to those studying other small gastropods.

Another publication which has recently come to my attention is " A Study of the Great Basin Land Snail, Oreoheliz strigosa depressa (Cockerell), by David Jones. Bulletin of the University of Utah, Vol. 31, No. 4, October 15, 1940, pages 43, 8 plates. This fascinating article deals with the species, not as a mere shell but as a real living animal. Dr. Jones deals with the anatomy of the snail in detail. Histology and physiology are given much attention. Notes on methods of examination should prove a definite help to those investigating other species. Life history, habits, and ecology are discussed. "

Sorry I had to leave early at our last meeting and did not have a chance to introduce my visitor, Mr. M.L. Walton of 1108 N. Central Ave., Glendale, Calif. He is interested in insects and during the past several months has become interested in nonmarine shells. I think he would appreciate receiving copies of our minutes."

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Cpl. F.M. Bayer, 4050th Air Base Unit, 2nd Squadron, Daniel Field, Augusta, Ga . " Another change of address- merely a change in designation. I have really appreciated receiving the minutes and am including a very small part of the debt I owe in back issues. It is a great compliment that I am included in the associates and friends list. I hope some day I may get out that way and meet all the folks I have written to." So do we, Ted- we will be looking for you.

Mr. A. Sorensen, 247 Granite St., Pacific Grove, Calif. " Go to it and keep up the good work. You are doing something that few could or would do. It would be a calamity if the mimeographed minutes should be discontinued or the policy changed. Herewith a dollar to add its mite."

Mrs. Elsie Post Betts, Post Ranch, Terra Bella, Calif. We are very happy to welcome Mrs. Betts to the ranks of California shell enthusiasts. Mrs. Betts writes that her son is stationed in the islands and has been sending her some beautiful material.

Mr. Will H. Galbraith, 1132 Summit Ave.,Pasadena 3, Calif. We regret very much to receive the following note from our good member " I am out on sick leave that does not bid fair to end soon.."

Walter Calleja, 49 Inguanez St.,Rabat,Malta, G.C. We have a very interesting letter from Mr. Calleja and are happy to add another conchologist from Malta to our list of correspondents.

W.G. Jeakings, 44 Locking St., Nelson, New Zealand. We were happy to have a long letter from Mr. Jeakings. He is well and active. Much beautiful material in our cabinets bear his label.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

June 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

Any institution or library interested in filing these minutes is welcome to all available back issues and a place on our mailing list without charge.

The next meeting will be held June 25, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.

Please mail all news about shells, shell publications, shell collectors, shell trips and localities to your editor,

John Q. Burch,
1611 S. Elena Ave.,
Redondo Beach, Calif.
Phone Redondo 6957.

We have just purchased another 100 reams of paper and the minutes fund is temporarily in the red ink.

The Nautilus, Vol. 57, No. 4, April,1944 has been received and contains several articles of particular interest to us. " Notes on Land Slugs of Los Angeles and Orange Counties, California" by Dr. W.O. Gregg; " Burchia, a New Genus of Turrids" by Dr. Paul Bartsch;"Peruvian Land Mollusca" By Dr. H.A. Pilsbry; and in the notes " Extended Ranges of Four Alaskan Marine Shells" by Walter J. Eyerdam, and a note by Dr. Pilsbry on " Hemphill's Catalogue of the land and freshwater shells of Utah,"

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" A Complete List of Bahamian Shells Collected and Classified by the Bahamas Conchological Society from its origin March 15th,1941 to January 1st, 1944" has been received. This interesting little booklet also conatins a list of the present members of the society.

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The June Bulletin of the Natural History Museum of San Diego is at hand and among other items this note should be of interest to our members " Before the next Bulletin is issued on October 1, the long awaited appearance of Volume 2, Memoirs of the San Diego Society of Natural History will doubtless be realized. This is the " Geology and Paleontology of the Marine Pliocene of San Diego, Calif. (Part 1, Geology) by Leo George Hertlein and U.S. Grant IV, which has been in press for many months and has now reached final proof. It will contain 72 pages of text and 18 plates, and will deal with the general subject of the Pliocene formations of which a considerable portion of the San Diego region consists, and the conditions which effected their deposit. The paper covered publication will sell for $1.50, but members of the San Diego Society of Natural History are entitled to it free of charge. This advance notice is being given in the hope that those members who know definitely that they will desire a copy may advise us at this time and thus assist in establishing the size of the edition. .. Publication of the work has been made possible with aid of a grant from the Ellen Browning Scripps Foundation.

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Mr. David Nicol, Box 2466, Stanford University, Calif. " I am in the midst of a puzzling question and your kind offer to let me have material comes at an opportune time. Glycymerids are very difficult to orient. Many conchologists have been confused about which side is anterior and which is posterior. I would like to check statements that have been made by examining the soft parts of the following species 1. Glycymeris pennacea (Lamarck)-- Arca decussata Linne (habitat, West Indies) or 2. Glycymeris (Axinactis) inaequalis (Sowerby) (Habitat, West Coast of Panama to Peru). If you know of any of the members of the Conchological Club of Southern California who have both the shell and soft parts of either of these two species, I would be very grateful for an opportunity to study them".

We have in our files a note from George Willett of the Los Angeles Museum in which he mentions this question on which Mr. Nicol is working." Grant and Gale say of Glycymeris " posterior side equal or longer" and I have followed them, though I realize that Carpenter gives the opposite in his description of Glycymeris subobsoleta. I have assumed that the rounded side is the anterior and the other, often elongated and usually showing indication of an angle is posterior as in Macoma. As you know, I have never studied the anatomy, so I may be all wrong. In some specimens the sides are very much alike, so it is difficult to distinguish between them."

****

Dr. U.S. Grant, Professor of Geology, University of California has written us an interesting letter. " I have just received the " Minutes of the Conchological Club of Southern California, May 1944 and have read parts of it with much interest. My work at the University has taken me more and more into geology and although I still teach paleontology it seems I have drifted away, by force of circumstances, from a study of the living marine invertebrates, such as the Mollusca. However, I am still interested in them and I was pleased to note in the minutes how many local people are really active conchologists during these days of stress and that they are adding to our knowledge of conchology by extending known ranges and learning more about the ecology of various important species. Information which the Club members get on geographic ranges and ecology are often important to the paleontologist. By assuming that the ancestors of living species had much the same ecologic requirements as their living descendents, one can use such information in determining the paleoecology of the past.

It may interest you to know that I once used data on the living habits of Recent shells in connection with an important investigation for a lawsuit involving a large sum of money. It was important to determine the former position of beaches, lagoons, sloughs, rivers etc. and Cerithidea californica, Melampus olivaceus, Physa, and numerous open coast dwellers were very useful when found in test pits and bore holes. The molluscan evidence was used along with data obtained from mineral grain analyses, grain size analysis, and the known lower limits of growth of costal plants such as Frankenia, Distichlis, Salicornia, and Spartina.

I inclose my check for $5. to assist in the preparation and mailing of the minutes of the Conchological Club of Southern California. With all good wishes. "

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Mr. and Mrs. E.W. Boerstler, R 1, Box 71, Vista, Calif. Thanks for the $1 donation to our fund and please accept our apologies for having misspelled the name in the last minutes.

Mr. W.P. Cook, 2966 Union Ave., San Diego 7, Calif. " Did you ever see a yellow Argonauta with no black on it and an orange mark on each side of the outer edge ? If so tell me the name of it."

If anybody answers our friend Cook's question please let this editor in on it also. He feels a bit like the boy who first saw the elephant " There ain't no such animal."

Family ANOMIIDAE

Genus *Anomia* Linnaeus, 1758. Type: *Anomia ephippium* Linnaeus (by sub. desig . Schmidt 1818).

" Shell of small to medium size, irregularly orbicular, laterally compressed or with left valve slightly inflated, right valve adhering to the substratum by a calcified byssus, which emerges through a deep byssal sinus just anterior to the apex; the sinus may grow together dorsally. Surface smooth or irregularly sculptured with radial riblets and lines of growth. The right valve bears the resilium on a raised knoblike process; in the left valve the resilium fits into a little depression under the apex. Interior with two byssal retractor muscle scars in the left valve." Dall, Bartsch, Rehder.

Pododesmus may be distinguished from *Anomia* in that it has but one conspicuous byssal scar whereas in *Anomia* there are two byssal scars present. However, the amateur will find it simpler to remember that *Anomia* has in all four muscle impressions in the left or top valve;- a small one near the hinge, three others near the center of the valve in a space circumscribed by a line . *Pododesmus* shows but two muscle impressions, the large byssal scar and a smaller and smoother one below it.

Anomia peruviana d'Orbigny, 1846. " San Pedro, Calif. to Peru and the Galapagos Islands" (Dall). Keen " Abridged Check List" gives the range to 37N latitude or near Monterey, Calif. A note from Dr. A. Myra Keen regarding this record follows " The record of *Anomia peruviana* at Monterey was given by Carpenter in the Mazatlan Catalogue, p. 168, as follows: " Monterey, 60 fm. Major Rich". Perhaps it may be attributed to an error of some sort, perhaps a mixing of collections before Carpenter saw them."

Note: None of our members have reported the species north of Los Angeles County, Calif.

Collecting data: Abundant all along the coast of Southern California. The upper valves are washed ahore in great numbers but complete specimens are seldom taken by littoral collectors due to the fact that the lowe valves remain attached and the habitat is below the low tide line. The bathymetric range is somewhat uncertain but it has been taken from dredgings as deep as 25 fathoms off Redondo Beach, Calif. (Burch); taken by H.N. Lowe at La Paz, Guaymas, Kino Bay, Mazatlan, Salina Cruz, Mexico.; Talara and Payta, Peru on sandy beaches in 1938 and 1939 (W.J. Eyerdam).

Genus *Pododesmus* Philippi,1837. Type (by monotypy), *P. decipiens* Philippi = *Placunamonia rudis* Broderip, Cuba, Recent. (Grant and Gale).

" Shell variable, right valve rather flat, suborbicular, somewhat pearly; byssal plug passing through foramen in right valve; a single conspicuous byssal scar present; hinge without teeth; valves sculptured with radial grooves" (Grant and Gale).

Subgenus *Monia* Gray,1849. Type (by sub. desig., Buc., Dautz. & Dollfus,1888), *Anomia zealandica* Gray.

" *Monia* Gray is much like *Pododesmus*,s.s. but has a larger byssal opening" (Grant and Gale.)

Pododesmus (Monia) macroschisma (Deshayes),1839. " Southern Bering Sea from the Pribilof Islands to Japan and the Okhotsk Sea on the west, and on the east south to and including the whole coast of Lower California, Mexico" (Dall).

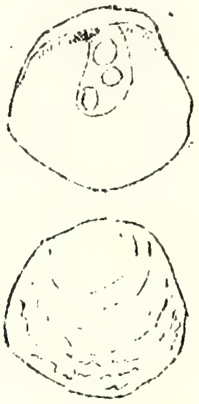
Collecting data: Very common the entire length of the coast on stones, pilings etc. near the low tide mark. The bathymetric range extends down to at least 35 fathoms on stones off Redondo Beach, Calif. It is a conspicuous fouling organism on anchored barges, bait floats etc. The bait traps at Point Mugu, Calif. were brought ashore at one time in order to scrape these shells off of them. It is safe to state that not less than one out of three of the large *Haliotis rufescens* brought in at Monterey, Calif. carry one or more

Pododesmus attached to the shells. (Burch); Gulf of Kronotski, Kamchatka .. 1925, Alaska peninsula, Unimak Island, Unalaska Island, Atka Island.1932, Mitrofania Id. 1928, Izhut bay, Red Fox bay, Shuyak strait, Afognak Id., 1922-24, Port Armstrong, Baranoff Id., 1917 and 1919, Icy Strait, Chicagoff Id., Admiralty Id., 1918, Raspberry Id., 1939. (W.J. Eyerdam). And a further note from Eyerdam " I also have it from many localities on Puget Sound . It assumes many shapes and forms, varying a great deal in thickness. Some valves are as thin as paper while others may be a quarter of an inch thick. I have a valve from Afognak Island that is nearly half an inch thick. A great many of the pectens are infested by a special form of this rock oyster. The pecten generally dies when the rock oyster attaches itself and most of them are deal to begin with the attachment. The lower valve of each Pododesmus is very thin and shows all the rib markings of the pecten very distinctly wherever the shell contacts. I believe that this special form of Pododesmus should be described as a variety".

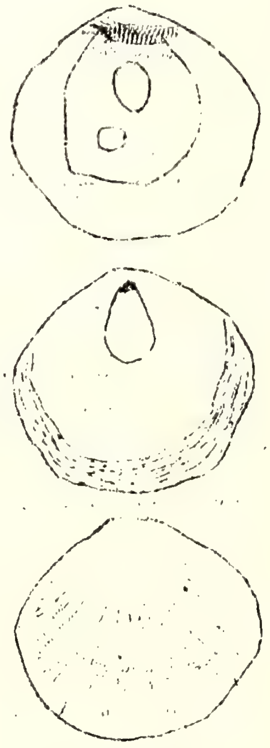
Pododesmus (Monia) foliata Broderip. " San Pedro, Calif. to Guayaquil" (Proc. U.S.N.M. vol. 37, p. 257). Note from Dr. A. Myra Keen " The Lat.34 record in my " Abridged Check List" is based on Dall's statement of range in the Peruvian Fauna paper. Dall could have been wrong, of course. I have detected a number of errors in his determinations".

This is a southern species and reported from many localities along the west coast of Mexico to Nicauragua by H.N. Lowe and others. However, the California record is questionable. No member of the club reports having seen specimens from this coast.

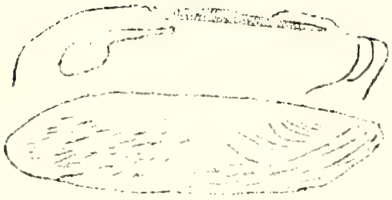
Note: There has been some confusion about the correct spelling of species under this genus. A note from Dr. A. Myra Keen should be of interest in this connection:" For the past several years I have been plumping for the spelling macroschismus, but after a restudy of the derivation, I concede that macroschisma is probably right."



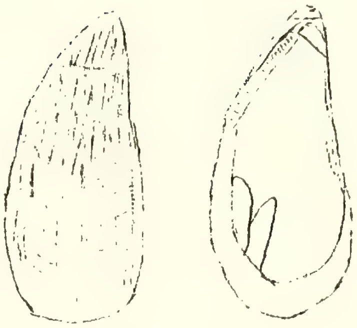
Anomia



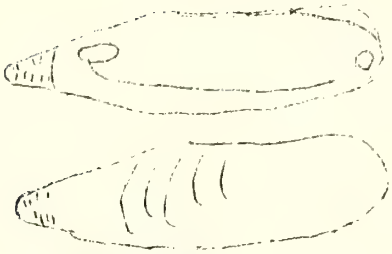
Pododesmus



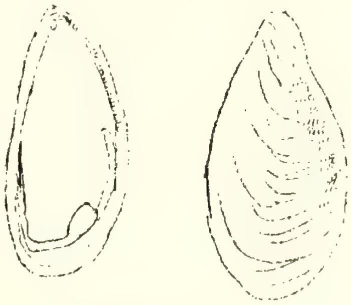
Volsella



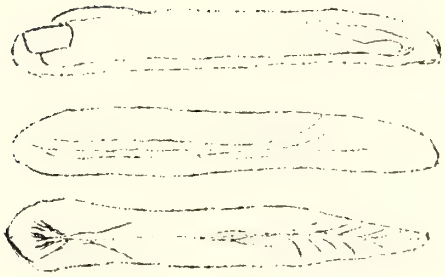
Septifer



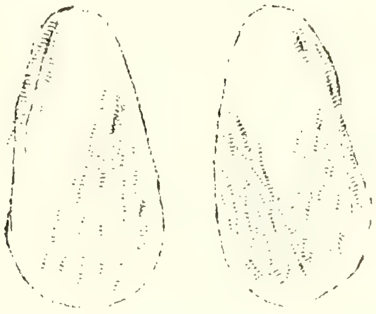
Lithophaga



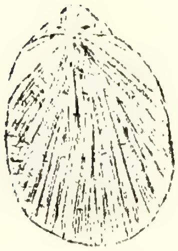
Mytilus



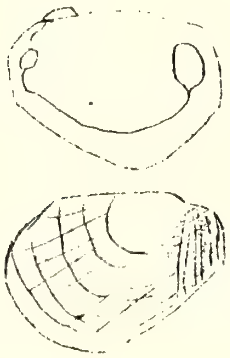
Botula



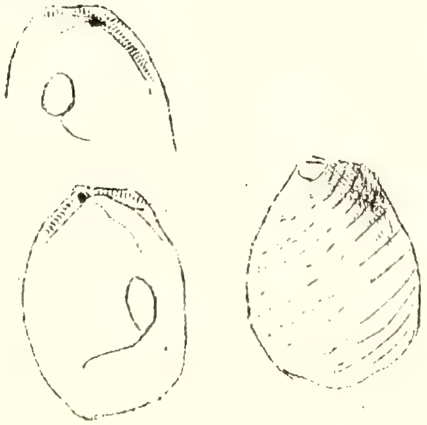
Amygdalum



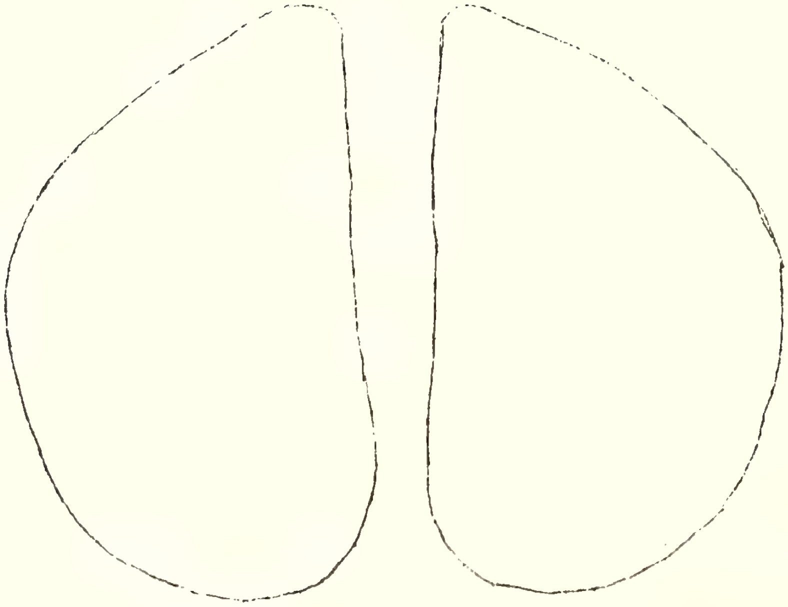
Crenella



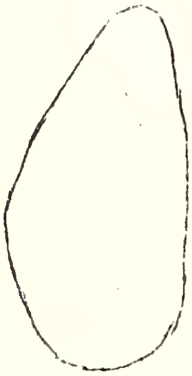
Musculus
(Modiolaria)



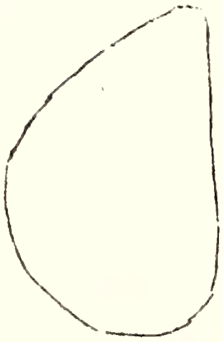
Dacrydium



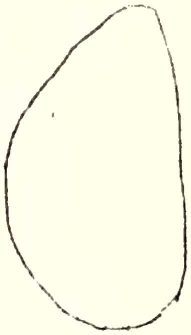
Mytilus dunkeri Reeve ?



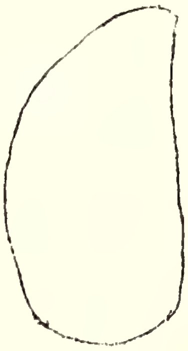
M. trossulus



M. dunkeri



M. edulis
(fr Atlantic)



M. edulis
(Alki Pt.
Puget Sound, Wash.

The above figures were made by selecting typical specimens from sets of the species and simply tracing the outline of the valves on the stencil. They only indicate the decided differences in form.

Family MYTILIDAE

Genus Mytilus Linnaeus, 1758. Type (by subsequent designation Anton,1839) Mytilus edulis Linnaeus.

" Shell wedge-shaped, rounded behind, smooth in the typical species; umbones terminal, pointed; hinge teeth minute or obsolete; pedal muscular impressions two in each valve, simple, close to the adductor". (Tryon S.S. Conch.)

Subgenus Mytilus s.s.

" Umbonal end of shell not greatly thickened. Sculpture when present consisting of incremental undulations and coarse, often indefinite or subdued radial ribs, sculpture sometimes lacking; fine bifurcating riblets absent" (Grant and Gale).

Mytilus (Mytilus) californianus Conrad,1837. " Unalaska, Aleutian Islands, eastward and southward to Socorro Island, Mexico" (Dall). " The type locality of M. californianus is " San Diego, Santa Barbara, and Monterey"; as the holotype is apparently lost, someone will have to designate a neotype from one of the localities some day " (Dr. A. Myra Keen).

This is the common large Mytilus of the California fauna, forming dense beds on most exposed surfaces from high tide line to the lowest tide line. The species is easily distinguished from others by its few broad radial ribs which are never wholly absent. Conrad's original description gave the length 2 1/8 inches which is a very small specimen. It would be interesting to know the maximum size attained by this species.

Mytilus (Mytilus) edulis Linnaeus, 1758. " Arctic Ocean to Cerros Island, and worldwide in temperate waters" (Dall).

This cosmopolitan species would seem to be too well known to deserve much comment. However, collections from different localities and different habitats show such great variations in shape that there have been many varieties, subspecies and species described. We will comment upon a few of these from this coast.

Mytilus glomeratus Gould, Proc. Boston Soc. Nat. Hist., 1851, p. 92; Mex. and Calif. Shells, p. 29, pl. 16, fig.8; Otia, p. 214. San Francisco Bay on floating sea weed". Carpenter, Suppl. Rept., p. 616 " Perhaps an accidental variety from being crowded on a floating stick". On page 643 " Short, stumpy. solid, crowded". Mr. A.M. Strong is of the opinion that this is merely a form caused by the mollusk adapting itself to a strange habitat and therefore not even deserving a varietal name. Dr. A. Myra Keen fails to mention it in her " Abridges Check List". Dall ommited it from Bulletin 112 and it is generally ignored. However, Dr. Joshua L. Baily Jr. in " West Coast Shells"1935, describes it as Mytilus edulis glomeratus Gould and states that it is the common species in San Francisco Bay, having the common name " Spherical Mussel".

Mytilus (Mytilus) edulis trossulus Gould, 1850. Proc. Boston Soc. Nat. Hist. vol.3, p. 344; it was figured in the Atlas of the U.S. Exploring Expedition (Mollusca), 1856, pl. 41, fig. 567. The type locality is " Killimook, Puget Sound, Oregon". Dr. A. Myra Keen writes of this " from my own little collecting expedition along the Oregon-Washington coast I concluded that this is Tillamook,Oregon, where the species occurs abundantly". However, Dr. Joshua L. Baily Jr. comments on this locality " The old Oregon territory included three states, Washington, Oregon, and Idaho which explains the placing of Puget Sound in Oregon."

Dr. A. Myra Keen writes (personal communication, May, 1944) " Some years ago I made a statistical study of so-called Mytilus edulis of the west coast. I found there is a significant difference in size between a) the true M. edulis of the Atlantic coast, which averages 59 mm. in length for 43 specimens; b) the form on the northwest American coast (Puget Sound northward), which averages 42 mm. in length (47 specimens) and, like the Atlantic form, is purplish on worn surfaces; c) the native form along the central California to Washington coast, which averages 30 mm. in length (50 specimens) and shows, when fresh, a bluish color on worn surfaces. (Unon inspection I find that my Oregon specimens, bluish when collected, now are purplish. The color must alter with age, and this distinction is therefore invalid.) Form c) fits Gould's description of Mytilus edulis trossulus. I am going to send you some samples. My research on mytilids came to a halt when I started measuring specimens from southern California, as these seem to be a mixture of true M. edulis (possibly imported on ship's bottoms) and the native form I consider to be M. trossulus. Maybe my statistical findings were spurious in the first place, as perhaps the mussels in our collection from Alaska and Europe were not representative of the population. However, the color differences are consistent, as also is the difference in height-length ratio."

In support of Dr. Keen's conclusions Lamy, E. " Revision des Mytilidae vivants du Museum d' Histoire Naturelle de Paris" , Jour. Conchyl. Part II, vol. 80, no.3 (Sept.1,1936) on page 107 cites Mytilus trossulus as a separate species, distinguished from M. edulis , he says, by constant differences in form, color, and smaller size. Gould's original comparative notes on trossulus read " It is more slender and more cylindrical than M. edulis; the dorsal wing is less elevated, the posterior slope rectilinear; the color is more glossy jet-black and without radiations, and there is a difference in the form of the muscular impression."

Mr. A.M. Strong is disposed to express his opinion of trâssulus by citing Carpenter, Suppl. Rept., 1863, p. 532 " Is scarcely a variety of M. edulis, which is very abundant along the coast under its usual modifications of form and color, but generally of smaller size."

However, note the figures on page 6 of these minutes.

In regard to the possible introduction of exotic forms of Mytilus on ship's bottoms Mr. A.M. Strong stated to the club that in his opinion it is highly improbable that the mollusk could survive the journey through tropical as well as colder water and this explanation of distribution should be carefully questioned.

Mytilus (Mytilus) dunkeri Reeve, 1857. ??? Conch. Icon. v. 10, pl. 5, fig. 17. Reeve's species came from the Philippine Islands. " Shell triangularly fan shaped, posteriorly flatly incurved and gibbous, anteriorly slopingly compressed, towards the umbones rather narrowly beaked, radiately superficially striated, decussated with concentric striae, shining black." "... It is a shining black shell, of a conspicuous fan shape, broadly gibbous and incurved on the posterior dide, with the umboes contracted and beaked."

Reeve did not compare his species with M. edulis.

Note: The Minutes of the Conchological Club of Southern California, #30 discussed this species. In the past few years a new species of Mytilus has invaded the bays and sloughs all along the southern California coast being very common in Newport Bay, Mission Bay, and San Pedro Bay. The first impression is of some odd form of Mytilus edulis L. However, a comparison of these shells with all known forms of edulis shows it to be a much more triangular shaped shell. Dr. Paul Bartsch recently identified these shells as the above species. They were sent him from San Diego and taken at La Jolla. The common explanation is that this exotic species was introduced with seed oysters from Japan. Some of us thought this conclusion illogical because of the fact that seed of the Japanese oysters has not been used in southern California to an extent sufficient to account for such a general distribution in such a short time. Paul Bonnot, Nautilus 49, No. 1, p. 1 gives an account of a large planting at Elkhorn Slough, California in 1930 which did contain M. dunkeri from Japan. However, Mr. Allyn Smith recently wrote that Bonnot had returned to the planting a number of times and could find no evidence that any Mytilus had taken root.

This new and exceedingly abundant species seems to mature much more rapidly than any of our native forms. Mr. A.M. Strong advises that he is making a careful check on the growth in one years time of a space in Newport Bay. The year will be up this summer and we look forward with interest to the results. We expect to hear of a much different life cycle which would guide us to some extent.

Miss Viola Bristol of the San Diego Museum writes " We have specimens of *Mytilus dunkeri* from the Inland Sea, Japan. They came to H.N. Lowe from Ann Arbor. They do not appear to be the same as our new and abundant species."

We are not only uncertain whether or not our shell is really *dunkeri* but Dr. A. Myra Keen (personal communication May, 1944) " *Mytilus (Mytilus) grayanus* Dunker, 1853 seems to be a prior name for the *M. (M.) dunkeri* Reeve. The reference for *grayanus* is: Zeitschrift fur Malak., vol. 10,1853. The two species are considered synymous by Lamy (Jour. Conchyl., vol. 80, pt. 2,1936, p. 119. Dr. Hanna is interested in this new record of an exotic species and possibly he will check up for us and decide whether Lamy is correct in synonymizing *M. dunkeri*."

Mr. A.M. Strong (personal communication, May 1944) intimates that we should check the possibility of our new shell being a more southern species from this coast before definitely classifying it as exotic: " At the time of Dall's death there was on his desk a list of species from south of San Diego. A copy was made of this manuscript which Grant has. This included *Mytilus algosus* Gould, range Magdalena Bay to Patagonia. The description of this appears in Pacific Exploring Exped. and has been listed as a synonym of *Mytilus atar* Molino, which corresponds to *M. edulis* in the Chilean fauna. I know of no record of *atar* north of the Galapagos. This Magdalena Bay record should be checked with our introduced *Mytilus* from Newport Bay and elsewhere.

Subgenus *Hormomya* Morch,1850. " The type was first designated by Jukes-Browne 1905, as *Mytilus exustus* Linnaeus, fortunately the same species later selected by Grant and Gale." (Dr. A. Myra Keen).

" Shell sculptured with numerous, fine, closely spaced, bifurcating riblets".

There has been considerable dispute regarding the relation of *Hormomya* and *Brachidontes*. They do seem very close. The distinction seems to be largely that *Brachidontes* has a produced anterior margin similar to *Volsella*. Grant and Gale suggest on this point " Perhaps *Brachidontes* should be recognized as a genus intermediate between *Mytilus* and *Volsella*, with *Hormomya* as a section." Dr. A. Myra Keen (personal communication, May 1944) " Dr. Schenck and I last year went into the question with some care, studying topotype material and original descriptions. We concluded that no true *Brachidontes* occurs on our coast today, although there were some species here in the Tertiary. It seems to us preferable to place *Hormomya* as a subgenus under *Mytilus*." Bur, Dr . Joshua L. Baily Jr. (Personal communication, May 1944) " Bartsch tells me that this subgenus should be placed under *Brachidontes*, because both of these have a taxodont hinge. I feel that the taxodont hinge is of greater importance than the terminal umbones, so I believe *Hormomya* should be placed under *Brachidontes*. The difference between *Mytilus* and *Modiolus* (*Volsella*) is in the position of the umbones. *Brachidontes* has umbones like *Modiolus* , *Hormomya* has umbones like *Mytilus*. *Hormomya*, therefore, cannot be a subgenus of *Modiolus*. If *Brachidontes* is made a subgenus of *Modiolus* (*Volsella*), then *Hormomya* cannot be a subgenus of *Brachidontes*. Before my attention had been called to the taxodont hinge, I considered *Hormomya* a subgenus of *Mytilus*, and *Brachidontes* a subgenus of *Modiolus*, but as I said above, I consider the taxodont dentition more important, so I think it best to unite these two. When I raised *Brachidontes* to generic rank in " West Coast Shells", I did so on the advice of E.G. Vanatta."

The following three species will be discussed at the end of descriptions.

Mytilus (Hormomya) stearnsi Pilsbry and Raymond, 1898. Nautilus, vol. 12, no. 6, p. 70, pl.4, figs. 1-3 (this plate was apparently never published). Type locality: San Diego,Calif. "... a length of 25 mm. or one inch being a good size", " An ' unusually large' specimen of Carpenter's M. multiformis measured: length 0.45, width 0.24, diam. 0.32 inch. This would be very small for M. stearnsi. As to color, our species seems to be invariably brownish-purple above, with the ventral face straw colored, white beneath the cuticle. None of the specimens I have seen could be called green. Carpenter describes M. multiformis as " purpureo, ad marginum ventralem viridi", with a variation " omnine viridi".

Mytilus (Hormomya) multiformis Carpenter, Mazatlan Catalogue, No. 168, p. 118 (date of part, as given on p. 109, Dec. 1855). Type locality: Mazatlan, Sinaloa Mexico. Described as varying from smooth to plicate, generally purple, with a larger or smaller greenish portion near the byssus, length of large specimen about ½ inch, breadth about ¼ inch.

Mytilus (Hormomya) adamsianus Dunker, Proc. Zool. Soc. London for 1856, p. 360 (date of part, May 8,1857). Type locality: Isthmus of Panama. A free translation of the original description would be " Shell ovate-trigonal, obtusely carinate, solid, sculptured with elegantly granulate bifid ribs in the adult, brownish purple and white, with horny epidermis, with terminal umbones, margin crenate. Length 10 lines, width 6½ lines, thickness 4½.

As many divergent views as are geometrically possible have been advanced to make the above three species one, two, three or more with almost as many ideas on generic allocation. A few recent references to articles dealing with this problem are: Dr. Fritz Haas, Nautilus vol. 56, p. 30, July 1942 and also Malacological Notes III, Zoological Series of Field Museum of Natural History, vol. 29, No. 1, pp 12-17, June 10,1943 : and E.P. Chace, Nautilus vol. 56, p 41, October 1942.

Dr. A. Myra Keen (personal communication, May 1944) " If one very variable species is involved in this complex, then the name multiformis must apply. On the basis of specimens at the National Museum I concluded in 1940 that the California form (stearnsi) was separable from the Panamic form. The Panamic form, which ranges north to Cape San Lucas, is smaller, with more divaricate finer sculpture. The California form, larger, with coarse sculpture ranges south as far as Oaxaca,Mexico. In the Gulf both forms occur and separation is difficult. The specimens in our collection seem to support this conclusion. Pilsbry and Lowe's species may be something else still."

Dr. Joshua L. Baily Jr. (personal communication, may 1944) in writing of multiformis " Specimens from Mazatlan are widely different from San Diego specimens. I have taken it in both localities and to me they look like different species. But Carpenter recognizes this difference and says that specimens taken at intermediate stations show a complete intergradation. But until I have seen a set of intergrades I am going to consider these species distinct, despite what Dr. Haas and Dr. Bartsch have to say. The question then arises as to names for these species." And in writing of stearnsi " This is the same species as that to which the names adamsianus Dunker and multiformis Carpenter have been given recently by Dr. Haas and others, but I feel sure that stearnsi and multiformis are different and am not sure as to what adamsianus is."

" Panamic Marine Shells", 1944, by Maxwell Smith lists and figures both M. stearnsi and M. adamsianus. Mr. A.M. Strong is positive in his statement that multiformis is a distinct species.

Therefore, the consensus of opinion seems to be that we have three species involved: M. adamsianus Dunker , the Panamic form ranging up to Cape San Lucas,; M. stearnsi Pilsbry and Raymond, the San Diego form, ranging from Santa Barbara, Calif. south to Oaxaca,Mexico; and M. multiformis Carpenter, ranging from the Gulf of California south.

Mytilus (*Hormomya*) *puntarenensis* Pilsbry and Lowe,1932. Proc. Acad. Nat. Sci. Phila. vol. 84. This is another species in this group. Type locality: Punta--renas, Costa Rica. " A larger species than *M. multiformis* Carp." " While this species is very close to *M. exustus* L. of the Caribbaean region, it dif--fers by having a decidedly longer hinge." This may be another distinct species or it may be in the synonymy of *adamsianus*. None of the members are familiar with it.

Mytilus (*Hormomya*) *multiformis houstonius* (Bartsch and Rehder),1938, Smith--sonian Miscellaneous Collections, vol. 98, No. 10, June 15, 1939. Described as *Brachidontes multiformis houstonius* Bartschand Rehder. Type locality: Sulivan Bay, James Island, Galapagos Islands. The authors state that this is a more finely sculptured race than typical *multiformis* from the mainland. The figures definitely place it in this group. None of the members report having seen specimens.

Mytilus (*Hormomya*) *recurvus* Rafinesque, 1820. Reported from Newport Bay, Calif. alive by Dr. Trmper and identified by Dr. Dall. One specimen only involved. No one has seen it before or since. There is no question but that this was error and the above name should be ommitted from all faunal lists of this coast.

Collecting data: *Mytilus stearnsi* Pilsbryand Raymond is usually found in crevices of stones rather than out in the open surf.

Genus *Septifer* Recluz, 1848. Type (fide Stoliczka,1871), *Mytilus bilocularis* L. " Shell like that of *Mytilus* but with an umbonal deck"

Septifer bifurcatus (Conrad),1837. " Crescent City, Calif. to Gulf of Calif." (Dall). This very common species is found in much the same habitat as *Mytilus stearnsi* Pilsbrya nd Raymond but is disposed to be on the under side of the stones and more Hidden from the light.

While the experienced collector soon learns to distinguish them at a glance, the certain check is to open the valves. The *Septifer* has an umbonal deck which is always very apparent.

Septifer bifurcatus var. *obsoletus* Dall,1916. Santa Barbara to San Diego, Calif. Type locality: San Diego Bay , mud flats. The description of this shell is short and almost self explanatory; " Shell large, the sculpture obsolete, the distal part of the valves nearly smooth".

With but few exceptions west coast collectors ignore this varietal name as being of little or no significance. The first inclination is to think of old specimens withthe sculpture worn smooth. However, specimens of this species are not uncommon in which the sculpture is obsolete but not worn. Miss Viola Bristol of the San Diego Museum reports that they have sets of this type from Santa Barbara and from San Diego. Mr. George Willett of the Los Angeles Museum has such sets in his collection.

Note from Dr. A. Myra Keen " There has been some question as to whether *Septifer bifurcatus* (Conrad) could correctly be assigned to our fauna, as Conrad gave the Hawaiian Islands as type locality. Dall, Bartsch, and Rehder in their manual of Hawaiian pelecypods (Bernice Bishop Mus. Bull. 153,1938), figure three species of Hawaiian *Septifers*, none of which resembles Conrad's figure. As the holotype is in the Philadelphia Academy and does resemble it, and as it seems pretty definitely to be the thing California collectors call *S. bifurcatus*, we may conclude that Conrad's statement of locality was erroneous."

Genus Volsella Scopoli,1777. (Modiolus Lamarck,1799) Type: Mytilus modiolus (by subsequent designation, Gray 1847).
" Shell obliquely oblong, expanded posteriorly and inflated along an oblique medial line from the umbonal end to the posterior ventral margin; anterior end produced beyond umbones; hinge edentulous in adult".

Here we have another of those mooted questions. Grant and Gale,1931 accepted Volsella, Dall, Bartsch, and Rehder " Marine Mollusks of Hawaii" accept it, and others. Dr. A. Myra Keen writes (personal communication May 1944) " Since publishing the Abdridged List , I have come to the conclusion that we must accept Volsella rather than Modiolus. Dr. Joshua L. Baily Jr. in " West Coast Shells" and many other current authors retain Modiolus.

The argument seems briefly to be whether or not Scopoli's shell was a misidentified species. If the original figure and description are correct, then Volsella antedates Lamarck's Modiolus and must be used.

Subgenus Volsella s.s.
" Shell moderately heavy, usually purplish or reddish and covered with a rather heavy periostracum which bears membranous fringes or hairs."

Volsella (Volsella) modiolus (Linnaeus),1758. " On the Pacific Coast from the Arctic Ocean to San Ignacio Lagoon, Lower California (E.K. Jordan); circumboreal" (Grant and Gale).

This range is a matter of considerable difference of opinion. In a preliminary outline the following statement of opinion was made by John Q. Burch " This species has been reported from southern California by many collectors from many localities. However, it is my opinion that there are not two distinct species here. I may be wrong. What about it? Volsella capax (Conrad),1837 is said to differ from this species in being " heavier shelled, more inflated, and has a more depressed region between the umbones" (Grant and Gale). But I have yet to see a local specimen that will not fit both description and figure of capax. I have certainly never seen anything from southern California that could possibly be confused with the Volsella modiolus of the far north or the Atlantic". George Willett commented " Neither have I . Jordan's shells from S. Ignacio should be studied". Dr. A. Myra Keen writes " We have no V. modiolus in our collection from south of Monterey or any V. capax from north of San Pedro. I suspect that you are correct in your opinion as to range". However, Mrs. Elsie Chace is disposed to think that the two species are separable in southern California stating that capax runs larger and darker than modiolus and is always slightly inequivalve. Mrs. Chace reported that Mrs. Ida Oldroyd considered V. modiolus as more usually from below low water mark, and to her V. modiolus and V. fornicata ran much closer together, but she said that V. modiolus lived singly as V. capax and V. fornicata in clusters.

Collecting data: Collected by W.J. Eyerdam in many places in Puget Sound, Baranoff Island, Afognak Island, Amoknak Island (heavily incrusted with nullipores and Saxicava arctica) .. also Atka Island, Kamchatka, Kola Fjord, and Tromso Fjord. I also have them from Ash Point, Knox Co., Maine coll. N. Lermond (very hairy) and off Owl's Head, Penobscot Bay, Knox Co., Maine. My specimens from Amoknak Island are up to 150 mm. long and 63 mm wide. These resemble more closely the specimens from Penobscot Bay. Specimens from Georges Bank, New Foundland look more like Mytilus californianus except that they lack the irridescent nacre. Without doubt these are two distinct species occuring in both the north Atlantic and north Pacific, one of which is undescribed. I have one large specimen from Gulmarn, west coast of Sweden that is also similar to the ones from Georges Bank, N.F., and others from Tromso, Norway coll. by I. Norberg in 1935 which are typical. The specimens from Penobscot, Maine and from Unalaska and Amoknak Island are similar to each other but are much more elongated than the typical and should at least rate as a variety of N. modiolus to distinguish them."(Eyerdam).

Volsella (Volsella) capax (Conrad), 1837. " Santa Barbara, Calif. to Payta, Peru" (Dall). Type locality: San Diego, Calif.

This is the common southern California species of this genus being found in great numbers on breakwaters, stones, pilings etc. It seems to reach its greatest abundance on wharf piles in the sloughs such as Newport Bay, Anaheim Bay etc. However, it is cast up on the beaches all along the coast. We are a little uncertain about the bathymetric range but it certainly ranges down to several fathoms below the tide line. We have no record of dredging the species at any depth beyond the littoral. The shell of this species is brick red when the periostracum is removed. It is our opinion that V. capax is a good distinct species although Keep and Baily " West Coast Shells" comment " ... though I have grave doubts as to its being really distinct from the last species".

Volsella (Volsella) recta (Conrad), 1837. " Bolinas Bay, Calif. to Maddalena Bay, Lower Calif., Mexico" (Dall).

Grant and Gale say of this species " ... differs from V. modiolus (L), in the greater extention beyond the beaks of the anterior alation; also the anterior half of the dorsal margin of the valves is straighter, the dorsal alation occuring posterior to the middle. V. recta attains a larger size and is often more elongate than V. modiolus".

The figure of this species in Keep and Baily " West Coast Shells" agrees with specimens so classified by most of the members of the club.

Collecting data: Our experience has been that the typical of this species is the off shore form with our records reading, 7 faths. off Santa Monica, 25 faths. off Redondo Beach in gravel, 15 faths. off Ensenada, Mexico etc. (Burch); " I do not recall ever taking the slender, light weight shell on shore" (Mrs. Elsie Chace).

Volsella (Volsella) recta flabellata (Gould), 1850. " Vancouver Island to San Diego, Calif." (Dall).

Grant and Gale, 1931, say of this variety " This form is close to recta, but is larger, less ventricose, particularly at the umbones, and the anterior alation projects farther forward".

This species is well figured in Oldroyd " Marine Shells of the West Coast of North America", Pl. 6, fig.2 and also figured by Grant and Gale, Pl. 12, fig.7. Both figures agree with the popular conception of this variety. The variety flabellata is considered a distinct species by many authors. However, intergrades are not uncommon with the occasional specimen very difficult to place. Mrs. Elsie Chace says I find the two forms which were named recta and flabellata easy to recognize- Gould's phrase " edge shaped in three directions" being very illuminating." Our experience has been that flabellata is the predominant bay form although we have dredged the variety along with the typical from as deep as 25 fathoms off Redondo Beach, Calif. There seems to be some difference of opinion regarding the habitat of the species. Keep and Baily " West Coast Shells" 1935, p. 63, state " ... formerly considered but a variety of rectus, grows to a much larger size. It is found off shore of British Columbia, and ranges as far south as San Diego in deep water", and Dr. Joshua L. Baily Jr. (personal communcication May 1944) says " The fact that you can't separate these forms proves that they are a single species. To my mind there appear to be three varieties. According to our collection, recta is the form in which the byssal and cardinal edges are parallel or nearly so, which recta flabellata is the large northern form in which these edges are close together at the umbonal end. I think it wise to keep both names."

Collecting data: Newport Bay, Calif. 2/25, Mugu, Ventura Co. 6/35, Mission Bay, San Diego Co. 5/36, Morro Bay, San Luis Obispo Co. very common and exceptionally large 1/1940, all on mud flats, often associated with eel grass (Burch); W.J. Eyerdam reports " I have this species from various local-

-ities on Puget Sound including specimens from the mud flats near Port Orchard, Kitsap Co. which are 7 inches long. I have heard of specimens up to 9 inches in length. In my collection are a number of specimens of rectus from California up to 6 inches in length. I have compared them with flabellata several times but failed to detect any essential difference except that the Puget Sound form seems to grow larger.".

Volsella(Volsella) fornicata (Carpenter),1864. " Trinidad to San Pedro and Cortez Bank, Calif." Type locality: Santa Barbara, Calif.

" In this species the beaks curve strongly forward, downward and backward so that a portion of their curve projects considerably beyond the anterior margins of the valves" (Grant and Gale).

Our experience has beenthat this species is confined to moderately deep water. It is not uncommon as deep as 25 fathoms on the gravel off Redondo Beach, Calif. However, we have taken it from kelp holdfasts, and at one time took large numbers of fine specimens from the lower portions of the old Saphire pilings off Redondo Beach. These were brought up by using diving equipment from a depth of about 40 ft. We list it from 20 fathoms off Monterey, Calif., 15 faths. off Ensenada, Mex., 25 faths. off Avalon, Catalina Island etc. It is not uncommon commensal on the Haliotis rufescens brought into the Monterey market. It is occasionally washed in after storms but is rarely taken by littoral collectors.

Subgenus Amygdalum Megerle von Muhlfeld,1811. Type: A. dendriticum Chemn.= A. arborescens Dillwyn (by momotypy).

" Shell of medium to rather small size, elongate to elongate-ovate, thin and fragile, white or translucent, smooth and shiny, with no sculpture except for delicate incremental lines; periostracum very thin and ivory white, yellowish or greenish in color, often with gray color markings. Ligament rather thin and slender. Hinge line simple, without teeth or projections. Interior white, pearly." (Dall, Bartsch, Rehder).

Volsella (Amygdalum) pallidula (Dall),1916. " Off Bodega Head, Calif. and south to Cerros Island, Lower Calif. in deep water" (Dall). Type locality: Off San Luis Obispo Bay, in 77 fathoms.

In the original description of this species (Proc. U.S.N.M. vol. 52, p. 404), Dall gives the measurements of the holotype as length 23; maximum height 11.5; beaks behind the anterior end, 1; diameter 5 mm. and suggested that it may be a variety of politus Verrill and Smith ,1880, an Atlantic species. This was accepted by some authors. Mrs. Ida Oldroyd lists the species as politus pallidus in " Marine Shells of West Coast of North America", 1924. Dall makes the following statement " None of the Pacific specimens have the golden yellow color of the Atlantic species and none of them attain the same size. Otherwise the shells are very similar."

We have dredged specimens of this species off Redondo Beach considerably larger than Dall's measurements and some of them are very definitely golden yellow. However, we have had no opportunity for comparison of our shells with politus and are disposed to place the burden of proof on those disposed to make a Pacific species a variety of an Atlantic species.

Collecting data: Our experience has placed this species between 40 and 75 fathoms in mud bottom. We have found it most abundant around 50 fathoms both off Redondo Beach, Catalina Island and Ensenada, Lower Calif. It is a yellowish white almost transparent shell and quite different from anything else. George Willett reports having taken it in 25 fathoms off Los Coronados .

Subgenus Brachidontes Swainson, 1840. Type (by monotypy), Modiola sulcata Lamarck. " Like Volsella s.s. but with numerous, well defined radial riblets; shell generally of medium or small size" (Grant and Gale). There are many more complete descriptions of Brachidontes available and they should perhaps be studied because there are many divergent opinions regarding its position. Dr. Joshua L. Baily Jr. in " West Coast Shells" 1935, Dall, Bartsch, Rehder " Marine Mollusks of Hawaii"1938 and many others use Brachidontes as a genus . Perhaps the most interesting comment in this connection is from Dr. A. Myra Keen (personal communication May, 1944) " My present opinion is that the species demissus is a ribbed Volsella, not a Brachidontes whether one considers the latter subgenus or genus. The ribbing does not bifurcate and swirl upward along the hinge margin as in Brachidontes."

Brachidontes vs. Brachydontes. Swainson first used the name in his Treatise on Malacology in 1840 and spelled it Brachidontes. Therefore this is the spelling we must use. However, the alternative spelling has been extensively used. Mrs. Ida Oldroyd used the y. An interesting little note on the matter by Dr. Joshua L. Baily Jr. " The reason that the alternative form Brachydontes arose was because it seems more reasonable etymologically. I am not a Greek scholar, but I believe the name Brachidontes means " arm toothed", and that Brachydontes means " short toothed". It may be that Swainson misspelled the name he intended to use."

Volsella (Brachidontes) demissus Dillwyn, 1817. San Francisco Bay introduced from the Atlantic with seed oysters.

Hanna, G.D. " Bull. of Dept. of Agric. Calif. vol. 28, no. 5" says " This is probably the species Stearns recorded in 1900 as Modiola plicatula Lamarck".

Collecting data: We have found it very abundant on the mud flats along the Bay Shore Highway between San Mateo and San Francisco.

Volsella diegensis (Dall),1911. " San Francisco Bay to Cape San Lucas"(Dall). Type locality: San Diego. We are uncertain of the subgeneric position.

This species was described by Dall in Nautilus vol. 24, pp 110-111, as Modiolus diegensis. However, Dall in Nautilus vol. 30, p. 1, 1916 placed it under Adula as subgenus of Botula with a very brief inadequate explanation since in both the original description and his later articles he mentions the fact that diegensis is not a borer. It is, of course, possible that Dall had made a study of the anatomy and found evidence to support this position. However, the well known habits of this common species are as different from those of the other species under Botula as it is possible to be. We have taken diegensis by the thousands nestling in with the Mytilus in many localities. Our experience seems to indicate that it likes rough open water. It is very common in the large neds of Mytilus californianus on the breakwater at Playa del Rey, Calif., Santa Monica , and also the breakwater at Coronado, San Diego, the type locality. However, we have also taken it from the barnacle covered pilings at the entrance to the Playa del Rey lagoon apparently not associated with Mytilus in any way in this instance. All of its habits as well as general formand appearance indicate that it is a Volsella, as originally described by Dall. However, Dr. A. Myra Keen in her " Abridged Check List" 1937 places the species under Botula.

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We received the following interesting data on the genus Mytilus after having completed the above notes from Mr. W.J. Eyerdam.

Mytilus californianus Conrad, 1837. The following specimens collected by Eyerdam ... Port Armstrong, Baranof Island (up to 180 mm. in length),1917.. Izhut Bay, Afognak Island,1922- Unalaska, Aleutian Islands, 1932 and several localities in Puget Sound. M. magellanicus collected by W.J.E. on the strait of Magellan in Dec. 1938 are almost indistinguishable from M. californianus.

(con.)

Mytilus (Mytilus) edulis Linnaeus,1758. " Mytilus chilensis Hupe which I collected at Puerto Natales, Chile and Mytilus platensis d' Orb. at Commodoro Rividavia are in my opinion varieties of Mytilus edulis. In my collection are specimens mostly of my own taking from many places in Alaska, Aleutian Islands, Kamchatka,Manchuria, Kola Fjord, Strait of Magellan etc. One large specimen from Bohuslan, W. coast of Sweden is quite similar to Mytilus dunkeri from Japan. Specimens from Unalaska Island are up to 90 mm in length and 40 mm. in width. Mytilus crassiteste Lischke which I collected at Vladivostock in 1928 is similar to specimens of Mytilus edulis from Unalaska but is correspondingly larger and heavier, being 112 mm. in length and 55 mm. in width. It also approaches Mytilus dunkeri Reeve from Japan. In its younger stages it is similar to and is the counterpart of Mytilus californianus in the Japan Sea.From Tromso, Norway, I have typical Mytilus edulis collected by I. Norberg and some very large ones collected by N. Lermond from Gays Island Knox Co., Maine.

Mytilus dunkeri Reeve. " Introduced from Japan on the California coast. Specimens collected by W.J. Eyerdam at Tsuruga, Japan and Vladivostock.

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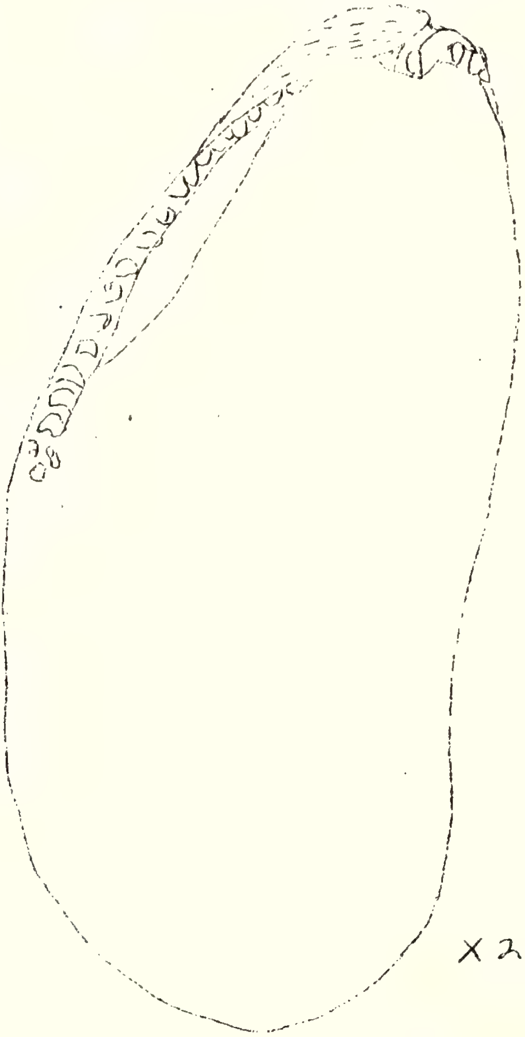
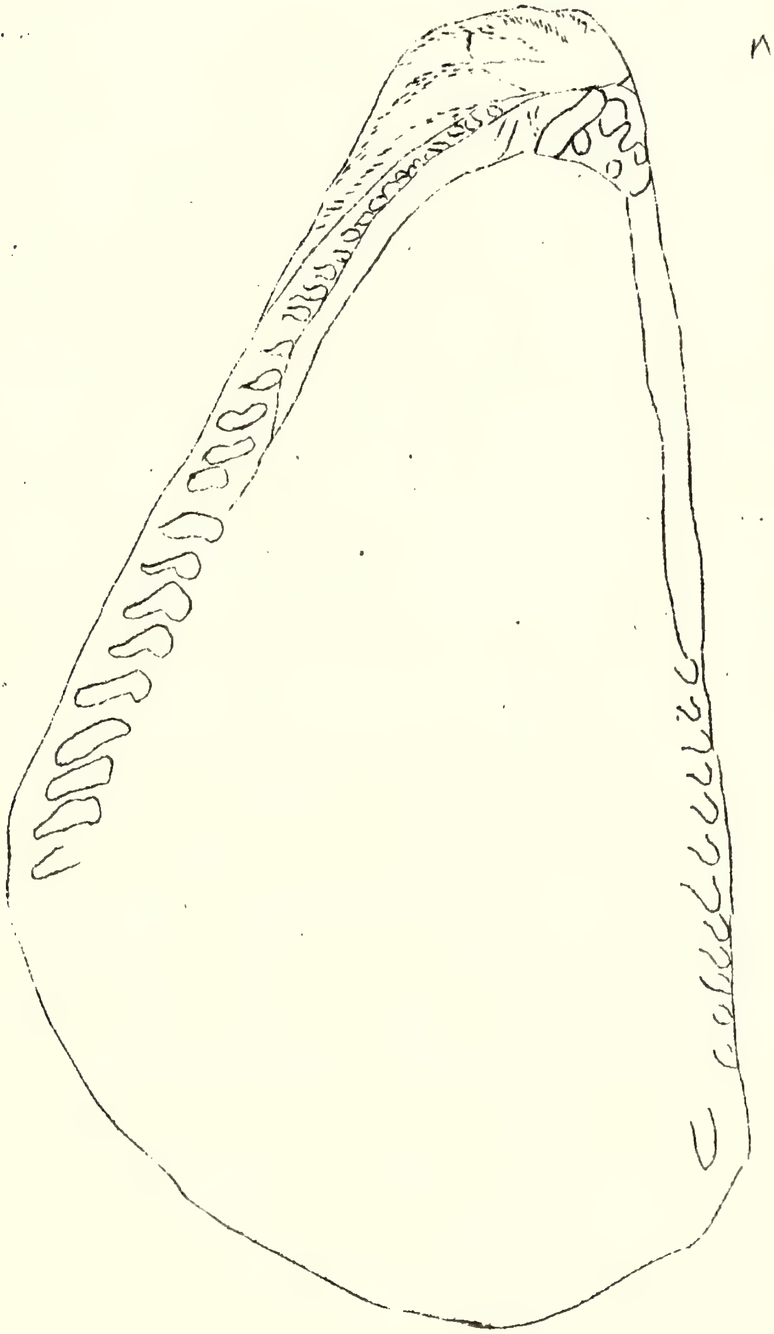


X 20

Mytilus multiformis Carp.
San Felipe, Mex. (Huttman)
6/37

Note by Tom Burch who drew these figures : " Young *Mytilus stearnsi* has characteristic shape as shown, but as they grow older and larger they approach the shape of *Mytilus multiformis* more closely. However, note the difference in HINGE and the fact that even on the nuclear part of *stearnsi* there are heavy ribs while on *multiformis* they are very faint. Note also the absence of " teeth" on the *side opposite* the ligament in *multiformis* as compared to *stearnsi*. I would say that these are definitely *different* species and possibly even genera."

Mytilus (Hormomya) stearnsi Pilsbry and Raymond
Punta Banda, Lower Calif., Mexico 10/1936



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Minutes of the Long Beach Shell Club

The Long Beach Shell Club met in the Childrens Room of the Long Beach Public Library, June 11,1944 at 2:30 P.M.

Twenty members and visitors were present. Mr. Ralph Bormann presided. A letter relative to the Fifth War Loan Drive was read. No action was taken as all present were aiding through other organizations. It was voted to reimburse the secretary for money spent for postage. A brief business meeting was held as the speaker wished to leave early.

The speaker, Dr. Howard Hill of the Los Angeles Museum discussed the Mitridae, giving the names and some of the distinguishing characteristics of the different divisions of this family. His talk was generously illustrated by a number of specimens in each division. These included shells from the Philippines, Java, Hawaiian Islands, and the local shells which included Strigatella idae, a shell named for the late Mrs. Ida Oldroyd of Long Beach.

Mrs. Jean Wilkins had brought tothe club a pair of shell portierres which had been presented to the Agassiz Nature Club by Mrs. Agnes Stovell.

Miss Julia Ellen Rogers then spoke on the use of shells in domestic artistry in the early days of California.

Mr. and Mrs. James L. Goldie, 745 Gaviota Ave., Long Beach, long time amateur shell collectors joined the club.

Miss Ruth Eaton's subject for July 9 meeting is " Collecting on Catalina Island". Miss Eaton was for a number of years head of the science department of the Avalon high school on the island.

The president adjourned the meeting.

Grace Stillwell, Secretary.

The next meeting will be held on July 9 at 2:30 P.M. in the Children's Room of the Long Beach Public Library. All interested persons are welcome.

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Mrs. W.V. Hadfield, Private Bag, Takaka, New Zealand. We are pleased to have a letter from Mrs. Hadfield advising that they are well even though able to do little with shells at this time. Our cabinets contain many fine sets of her collecting.

Harry S. Ladd, Chairman, Committee Marine Ecology as Related to Paleontology, National Research Council, 119 W. 8th Street, Rolla, Missouri.
We are honored to add this name to our subscription list and have on request forwarded all available back issues.

Minutes of the May Meeting- 1944.

The Conchological Club of Southern California met at the usual time and place, Sunday, May 28, 1944.

Mrs. Elsie Chace, the president, called the meeting to order with 17 members present. No reports from standing committees were offered.

It was moved and carried that we act on the suggestion made by Mr. Allyn G. Smith and attempt to contact the commanding officer at Ascunsion Id.to try to persuade him to post a request that some interested soldiers with time on their hands help us get some specimens of Pecten adacensionis Osbeck, a most desirable shell to learn more about, that location being the one from which it was described. Mr. A.M. Strong and Mrs. Effie Clark were appointed and later Mr. Strong consented to do the spade work since the secretary's present surroundings are not conducive to military matters.

Considerable discussion took place as to the time required for the asigned subjects and the consensus of opinion seemed to be that the time covered in our meetings was far too short to do justice to many of the groups and that there was no necessity to crowd the program since by its very nature it it readily suits itself to an extention of time whenever a need arose.

The discussions began with the finish of Miss Cook's report on Lima, Anomia, and Monia, which could not be covered by the previous meeting due to the many things that came up in the Pecten discussion.

Mrs. Chace then took up the discussion of Mytilidae, concerning which there was planty to be said and closing time arrived all too soon to see its completion, so, the meeting was adjourned. Effie M. Clark, Secretary.

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J.M. Dowdle, S 2/s, P.A.D. #3, c/o F.P.O., San Francisco, Calif. We were very happy to have a V mail letter from Jack. " Hello Folks: Just a few lines to let you know where I am (as nearly as present restrictions will permit) and that I am alive and well at the moment. New Guinea is an interesting place, especially for shell (mollusk) collecting. The only hitch is that I never seem to get time for any collecting....One of the men here in the outfit has a sister at Stanford who is interested in collecting shells from here. She is Miss Elizabeth M. Watson. I wonder if you know her?

I wonder if the club is very active these days.If they are and you have them available I wish you would send me a copy of the proceedings. I dont suppose you have much time to fool around with shells any more but if you do and would like for me to I will send you some from down here. I find a species of Spondylus here that I have never seen before. If it is not described and you would like the task I think an appropriate name for it would be .S. milnoensis , as you will readily agree when you see it. If you have any literature pertinent to this area I would certainly like to have some information about it.This is about all that I can think of that would be passed by the censor, so I will close. With very best reagrds to all, As eve, Jack Dowdle."

Pvt. James P. Conlin, ASN 38627568, Co. C, 28th Med. Tng. Bn., 3rd Platoon, Camp Grant, Illinois. " After six months in the army I have at last completed medical basic and am home on short leave (5 days) before being assigned. With much pleasure I have been reading the copies of the " Minutes" you sent to my home address. They fill a great need that I am sure was long felt prior to your initiating them. They are certainly a monument to your extreme sincerity and energy. Please accept the small amount inclosed toward their continuance. "

Pfc. Charles B. Lee, 2143 A.A.F. Base Unit, Section B, T.A.A.F., Tuskegee, Alabama. " You will remember that I received a Murex rhyssa and a gemma from you. They were stolen from me on the way home along with a magnificent specimen of Murex trocheli. I had them in a candy box and a not too moral person took them when I turned my back. I suppose that is life, but the loss is keenly felt. Some of the fellows about here have rings with immitation Cat

(con.)

Eyes in them. Since I know the source of the original I wish to get 2 operculums of the gastropod, Turbo petholatus L. characterized by the green operculum. If possible, send me two of the most vivid green/"

Note: We are mailing Lee with our compliments a couple of specimens of Murex rhyssa but find our stock of the M. gemma is exhausted. Neither do we have the operculums of the Turbo. Any of the members having these things in their duplicates will, I know, be happy to send them along. And guess we will just about have to leave it up to Lee and our other boys to collect their own M. troscheli since it comes from Japan.

F.R. Aldrich, Aldrich Museum Balboa, Calif. " Enclosed find $2 to keep the Minutes marking time, we sure are getting a lot out of them."

Dr. F.M. MacFarland, 775 Santa Ynez St., Stanford University, Calif. We are indeed flattered to receive the following note " It is a continuing pleasure to receive your excellent " Minutes" so full of interesting information and binding together your membership's common interests. I would not worry very much about the " scientific record" bugaboo- just let the future take care of that. You have a real live organization, and your mimeographed minutes will grow into a more pretentious form later on, for there is ample need and room for it on the Pacific Coast."

Mr. Ralph Dury, Cincinnati Museum of Natural History, Cincinnati 10, Ohio. " Many thanks for the numbers of the Minutes of the C.C. of S. Calif. I enjoy very much the reading of the splendid activities of your club.

The Cincinnati Museum probably has one of the largest and most complete collections of conchological specimens in this country. As you probably know this museum received the first duplicate collection of land and freshwater s shells from the estate of Dr. E.D. Cope, the famous Philadelphia naturalist. We have fresh water Unionidae collected almost one hundred years ago when our Ohio river at Cincinnati was considered the classic locality for these shells. All of the old-time collectors of southwestern Ohio were land and fresh water shell collectors and this museum has many thousands of specimens of this fine material. Some day in the near future I will send you a lot of these shells many of which are unobtainable now, for distribution to the members of your club. We have some twenty thousand species of mollusk shells in the collection now and are constantly acquiring others by purchase, through the generosity of an interested member. Our shell exhibits have been the propelling force behind the interest displayed by many local collectors. Please accept the small contribution to cover mailing expense of the Minutes."

Mrs. Elsie Post Betts, Post Ranch, Terra Bella, Calif. " .. want to thank you for sending us the minutes of the club meetings, and enclose a contribution thereto... We are looking forward to paying you a visit when this gas rationing is over, and also attend some of your shell club meetings."

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Along with announcements of a number of publications on other groups we have the following notice. The New York Academy of Sciences, Central Park West at 79th St., New York 24, N.Y. The Academy announces the publication of " The Relation Between Centriole and Centromere in Atypical Spermatogenesis of Viviparid Snails", by Arthur W. and Priscilla F. Pollister, Volume XLV, Art. 1, pp. 1-48, Annals of the New York Academy of Sciences. Published Nov. 30, 1943. Price 75 cents.

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Mrs. Clara A. Linney, 2184 Pine Ave., Long Beach, Calif. " No doubt you have noticed that I have not attended since you took me in. I am sorry that I must forego the pleasure I could derive from it, owing to illness and that I must curtail my activities. I enjoyed the two evenings with you so much. Hoping the club will continue to grow, and have many more happy meetings."

The following new publications have been received:
" Lamellinucula, a New Subgenus of Nuculid Pelecypods", by Hubert G. Schenck, Journal of Paleontology, vol. 18, No. 1, pp. 97-99, 1 text figure, Jan. 1944.
" Annotated List of the Fauna of the Grand Isle Region", Louisiana State University, Marine Laboratory, 20 pages, no figures.

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Roding vs. Bolten. No doubt some of the members have been curious about why it is that one authror will use Roding and another Bolten as the author of the same species. To those the following short note by Dr. A. Myra Keen will be of interest. " It is my opinion that the author citation should be Roding rather than Bolten. It was Bolten who owned the collection and perhaps thought up the names, but it was Roding who gave them scientific validity by citing references to figures. According to International Rules the author of a name is the one who establishes its validity by citing a figure or other indication."

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Hon. A.E. Salisbury, 51 Amersham Hill, High Wycombe, England. We are greatly flattered to be informed that the title " Minutes of the Conchological Club of Southern California" is being inserted in the Moll. Section of the Zoological Record for the information of molluscan workers. It is our honor to add the above name to our mailing list.

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Dr. B.R. Bales, 149 West Main St., Circleville, Ohio. Doc's letters are always too good to keep them personal. " Here is my " vote of confidence" with bells on and lard in its hair and I'm 1000% in favor of what you are doing. I have heard from other sources that some of the " big boys" employed by the museums do not look with favor on the work of the so-called amateurs and when one of them presumes, after hours and days of collecting, studying the mollusk for days in its haunts, spent gallons of sweat while doing so to name a new one, he is at once found to have trespassed upon the forbidden ground of the professional. To my mind a " professional" is just an overgrown amateur and sometimes is just a fossilized amateur. Age has nothing to do with it, for I know of some more or less young professionals that are like the middle aged man- they have stopped growing at top and bottom, but continue to grow in the middle. If an amateur should by any chance presume to name a second or even a third shell- woe is his portion. This is not personal, for I have named but one shell and if I'd find a double jointed whosis colored with all the colors of the rainbow, I'd hesitate to name it even if it had a marsupial pouch, the tail of a scorpion, fangs of a rattlesnake, and the head of a horse and also went cross eyed every change of the moon. I'm not sticking my neck out. But you have every right to do as you are doing and I have heard from a number of " shellers" who agree with me that you are really doing a fine work and I' venture to say that every issue of the Minutes is read from " kiver to kiver" by every one who receives it. It's so good that we inlanders who do not have close associations with other collectors are jealous of you folks who can get together regularly. By all means keep up the good work and the divil take the hindmost.

Took part of a day off the first part of the week and in addition to a fine mess of mushrooms(morels) and a lot of wild flowers for our garden, took more than a hundred *Anguispira solitaria*, three each of *Polygyra profunda* and *thyroides* and a couple of *Zonitoides ligera*. Never saw so many *A. solitaria* before and we could have taken them up into the thousands, I believe, had we wished, but I had a big job as it was by the time I had boiled and squirted those I had taken. All these were taken in the space of not more than a half hour. If you need any *A. solitaria* - just speak up, time's a-wastin'."

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Yes- Darwin was an amateur of his day and there have been a host of other eminent men who were not in the ranks of the professionals. However, our experience has been that more than 99% of the professional scholars are cordial co-operative fine companions in or out of their museums.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
July 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

Any institution or library interested in filing these minutes is welcome to all available back issues and a place on our mailing list without charge. Students of particular problems are always welcome to ask us for specimens for study as well as all information we may have.

The next meeting will be held August 6, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the first sunday of each month.

Please note the new address of the editor of these minutes. Mail all news about shells, shell publications, shell collectors, shell trips, localities etc. to,

John Q. Burch,
4206 S. Halldale,
Los Angeles 37, Calif.

Minutes of the June Meeting- 1944

The Conchological Club of Southern California met at the usual time and place, Sunday, June 25, at 2:30 P.M.

There were thirteen members present. In the absence of the president, Mr. George Willett, the vice-president presided.

In a report of the program committee a motion was made and carried that the time of the meetings be changed from the fourth to the first sunday of the month. Under the new skedule the next meeting of the club will be August 6,1944.

There will be no change in the program except to slow it up enough to finish up the discussions which seem always to take up more and more time than was originally planned for them.

Motion was made and carried that the money now in the treasury be appropriated to the purchase of material needed in the make up of the Minutes- Amt. $2.95.

Mrs. Jean Wilkins had charge of the study program and her subjects were Periplomatidae,Thracidae, and pandoridae. The information brought out will be found elsewhere in the minutes. It was good to have Mrs. Wilkins with us again. .

Closing time came all too soon and the meeting was adjourned.

Effie M. Clark, Secretary.

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Mrs. Effie M. Clark, c/o Ray S. Williams, P.O. Box 511, Yuba City, Calif. The above is the summer address of our secretary. We will miss her until the opening of school in the fall.

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An interesting paper by Mr. George Willett of the Los Angeles Museum appears in the current issue of the Bulletin of the Southern California Academy of Sciences, Vol. XLIII, Jan-April,1944, Part I- " Two New West American Pelecypods". The two new species are Cardita hilli Willett, 1944 and Chione picta (Dall) Willett, 1944. They are both found in the Newport Bay Pleistocene as well as other localities.

MINUTES OF THE LONG BEACH SHELL CLUB

The Long Beach Shell Club met in the Children's Room of the Main Public Library, July 9, 1944 at 2:30 P.M. Mr. Ralph Bormann, the president, called the meeting to order. Seventeen members and two visitors were present.

The club voted to send to the Conchological Club of Southern California five dollars to help pay the cost of the paper used in mimeographing the notes and minutes of the clubs.

Miss Ruth Eaton reported on collecting at Alamitos Bay and Mr. E.P. Baker at Anaheim Landing. The government having priority at both places, collecting was found to be neither very profitable nor exciting. Miss Ruth Eaton, former head of the science department in the Avalon High School spoke on " Collecting on Catalina Island". With word pictures, maps and specimens, she took the club along with her on her collecting trips covering a period of seven years. With a relief map she showed the roughness of the terrain. The steep sides of the canyons together with the looseness of the soil makes the most of the collecting coves inaccessible except by boat. By rowboat, launch or government boat she was able to reach many of them. Miss Eaton had many specimens to illustrate her talk and related many adventures connected with the securing of them. She told how word would come to her classroom that a certain shell had put in its appearance on the beach. The biology class would be rushed to the spot at once to gather the specimens while they were to be had. Species very abundant when she first went to the island cannot now be found. Among the specimens shown by the speaker were two choice specimens of the paper Nautilus , Argonauta pacifica Dall. Another was a bottled specimen showing the animal itself. Miss Eaton left in the Avalon High School a fine representative collection of Catalina Island shells. Specimens of the Janthina exigua (J. bifida Nuttall ?) collected by Miss Eaton were distributed among the members.

Through the courtesy of Mrs. Effie Clark the club received a welcome donation of land snail shells from Cuba.

An interested visitor was eleven year old Karen Richards of 1848 West Canton, who is to spend the summer on Catalina Island and is going to make shell collecting her hobby. Mr. Bormann adjourned the meeting.

*************Grace Stillwell, Secretary.

The next meeting of the Long Beach Shell Club will be on August 13 at the usual meeting place and time.

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Walter J. Eyerdam, Seattle, Washington- " In reference to the yellow Argonauta which Mr. Cook asked about, I can say that Argonauta boettgeri Malzan answers pretty well the description as it is yellow, with no black and has an orange mark on each side of the outer edge. It reaches a length of about 55 mm. and is native to south Japanese waters. "

"P.S. With this post I am sending you a striped Saxidomus giganteus Deshayes which I got yesterday while digging clams. Please return it when it is positively identified."

Professor T.D.A. Cockerell, 900 10th, Boulder, Colorado. " Many thanks for your note. We are here at our home for the summer. Expect to resume at the Desert Museum, Palm Springs in October."

Ralph O. Fox, 1048 Monterey Ave., Berkeley 6, Calif. We are happy to welcome another California sheller to our circle.

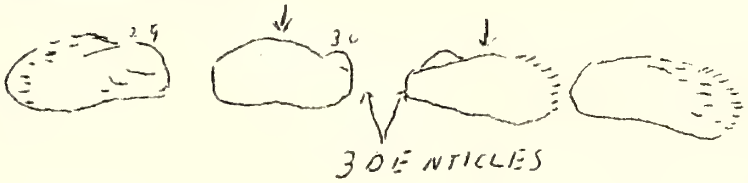
W.G. Parris, Boom, Tennessee. We have a fine long letter from Mr. Parris with whom many of us have exchanged for years. Mr. Parris has fine land and fresh water material from his section to exchange for any species new to him.

Genus Botulina Dall,1889. U.S. Nat. Mus. Bull. 37, p. 38. In this publication Dr. Dall simply used the name Botulina as a section without description. However, in " Marine Mollusks of Hawaii", Bernice P. Bishop Museum Bulletin 153,1938, Dall, Bartsch, and Rehder, Botulina is set up as a distinct genus following the species of Modiolaria (Musculus) and described as follows " Shell small, elongate-ovate, with a more or less prominent posterior keel, moderately thin, with a thin brown periostracum clothed posteriorly with a dense mass of hairs; umbones anterior, terminal or nearly so. Sculpture like that of a Musculus , finely radiately costulate anteriorly and posteriorly, with a triangular, posteriorly expanding area below the beaks, which is devoid of radiate sculpture. Ligament subinternal, moderately stout, with rather strong denticles anterior and posterior to it. Margin crenulate; ventral margin slightly concave."   Genotype: Modiola opifex Say (by monotypy).

Modiolus (Gregariella) opifex Say, 1825 is the label at this time on sets in all of our west coast collections with few exceptions. This is the name used by Dall in Bulletin 112 and followed by Mrs. Oldroyd. Dall gave the range as " Santa Barbara to Gulf of Calif.". But before consideration of the specific name it seems advisable to discuss the generic allocation. In the first place it seems certain that all of the species involved belong either in the genus Modiolaria (Musculus), or in a separate genus of their own rather than in the genus Volsella(Modiolus). Data and opinions follow without regard for arrangement.

We are indebted to Dr. A. Myra Keen for the following notes on the name Gregariella Monterosato, Naturalista Siciliano, vol.3, fasc. 3, p. 90, Dec. 1883. Type, fide Bucquoy,Dautzenberg, and Dollfus,1890; Modiolus sulcatus Risso,1826.(a homonym)-- M. barbatellus Cantraine, 1835, a Mediterranean species shaped like a Modiolaria (in fact, Lamy and others consider Gregariella a subgenus of Modiolaria rather than Volsella) , with radiating ribs and a heavy bearded epidermis on the posterior surface.

Below are tracings of figures of Modiolaria sulcata (Risso) as figured by Bucquoy,Dautzenberg,a nd Dollfus, Marine Moll. of Roussillon, vol. 2,1887. This is the genotype of Gregariella. The description mentions fine, radiating ribs, internal ligament, and denticles at either end of ligament. Bearded epidermis. Brown color.



Comment : Obviously, if Bartsch and Rehder have determined that the mediterannean species sulcata is definitely different, then Gregariella cannot apply to our shells and Botulina is good and should be used. However, no comparison in print to our knowledge seems to have been made of Botulina and Gregariella. Another note by Dr. A. Myra Keen follows:" Reviewing the matter again, I would say that Gregariella has priority over Botulina by a few years (as Dr . Dall apparently had recognized by 1907 when he published the Porto Rico list), that Gregariella is a subgenus of Modiolaria (or Musculus) , and that our species is distinct and nameless. The Dall,Bartsch, and Rehder usage of Botulina may have been an oversight; at least they do not definitely compare it to Gregariella and show its difference."

Lowe in Trans. San Diego Soc. Nat. Hist., vol.8, p.27, lists Gregariella denticulata Dall from Punta Penasco, Mexico.

However, Dr. L.G. Hertlein of the California Academy of Sciences, (per . communication, June 16,1944) says" The question of the correct genus for the west coast shell is something of a problem. The denticulation and bearded appearance seems different from Modiolaria. I have compared our specimens of denticulata with the illustrations of Modiola sulcata Risso, the type of Gregariella, shown by Bucquoy, Dautzenberg & Dollfus, in volume 2, pl. 29, figs. 29-32, and with specimens of this species from southern France in the Academy's collection. The specimens from France are much less strongly radiately striated than the west American shells. Another difference is that the ventral margin is smooth while in the west American shells the entire margin is denticulated. The decision as to which genus to use seems to rest upon the importance of the amount of denticulation. After a consideration of the facts I am inclined to favor use of the name Botulina Dall because it seems to be applicable without doubt to denticulata. Perhaps one could use Botulina as a subgenus of Gregariella. However, since Botulina is available for the west coast shell both Allyn and I favor using it as a genus, subject of course to change if later study shows that it should be considered to be a subgenus of some earlier genus or possibly abandoned if necessary."

We will accept the advice of Dr. Hertlein and subject to later correction use Botulina for the generic allocation.

Botulina denticulata (Dall),1871. American Journal of Conchology, vol.7, 1871, p. 154." Shell with a thick blackish brown epidermis, furnished posteriorly with strong, fine, projecting beards, which entangle particles of sand etc., and form a solid mass of regular form, which cannot be removed without crushing the shell. There is an obtusely rounded carina to the posterior end of the shell, and by the formation alluded to this carina is greatly exaggerated, sharpened, and made to terminate in a sharp point some distance beyond the end of the shell. The general form of the valve itself is elongate-ovate, with a not prominent umbone. Both ends of the margin are gently rounded, the anterior end being slightly the smaller. There is a slight gape and concavity in the middle of the ventral margin , otherwise both dorsal and ventral margins are equally arched. The entire margin is denticulate, and the denticles are particularly strong on the hinge margin, which is interrupted for the large and strong ligament. The beaks are deep and vaulted and the valves inflated. The color of the shell is pearly white, with a purple spot behind the posterior muscular impression, and the umbones tinged with purple. The epidermis is blackish bwown,thick, and liable to peel off; it is marked with faint radiating lines, as nearly as the incrustations will permit of perceiving. Long. .7, alt. .4 in. Habitat, Acapulco,Mexico, Dall, 1868.

This very curious species is unlike any other I know of . In some respects it approaches Modiola opifex Say, which is a much more elongated shell from Rio Janeiro, Brazil."

The above species was described as Modiolaria denticulata Dall.

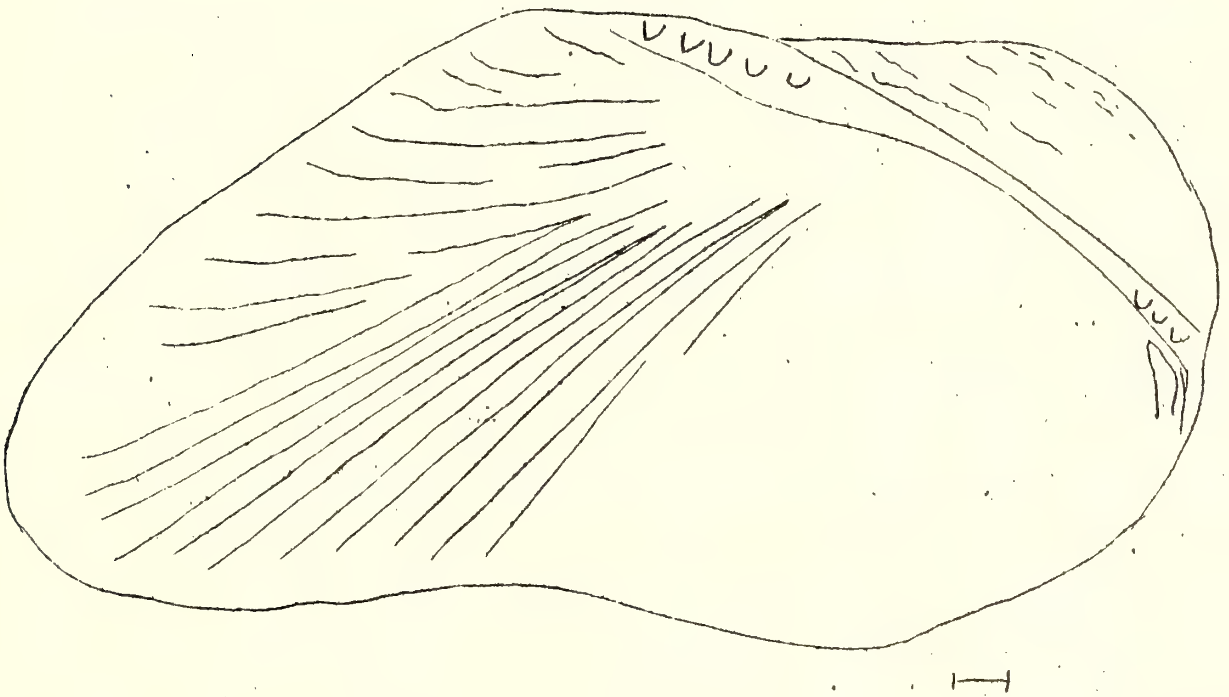
We have the following comments by Dr. A. Myra Keen of Stanford University " Comparison of west coast specimens of opifex with the original figure and with topotypes from the Caribbaean area leaves no doubt in my mind that our species is distinct. There seems to be no name for it unless the Modiolaria denticulata Dall mentioned by Orcutt in Molluscan World was intended to apply" " West coast specimens differ from east coast in outline as follows: groove shallower, posterior end less obliquely attenuated, posterior dorsal margin less pouting. " " The synonymy card in the drawer at the National Museum placed opifex under coralliophaga, with semen Reeve also as a synonym. This would have been Dr. Dall's last word on the matter."

Dall in The Mollusca of Porto Rico, U.S. Commission of Fish and Fisheries for 1900, published 1901, p. 470, lists, Section Gregariella Monterosato ,1884, Modiolus coralliophaga Gmelin,1792, equals Botula semen of authors, equals Modiola opifex Say.

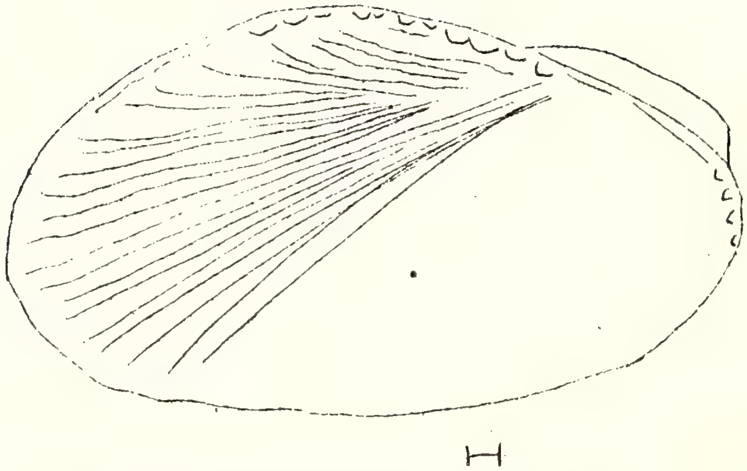
The original description of Mytilus coralliophagus Gmelin, in Systema Naturae ed. 13, p. 3359. " M. testa medio carinata margine crenata: umbone obtuso." Chemn. Conch. 8, t. 84, f. 752. Habitat in Oceano indico et americano, corallifero, scopulos pholadis instar perforans, testa 3/4 pollicis circiter longa." Dr. L.G. Hertlein (personal communication June,1944) " .. have just gone over the problem of the allocation of the small Modiola-like form generally referred to opifex Say or denticulata Dall. A comparison of our specimens with Say's original figure convinces me that they belong to the same genus but there seems to be some doubt as to their specific identity. Say's shell apparently has a more pronounced medial depression and the posterior end is more tapering. Whether these differences remain constant in a series of opifex from the east coast I do not know. According to Miss Keen the species are different and after a study of the original illustration and description I am inclined to refer our specimens to denticulata Dall. I have not seen a figure of the type of Dall's species. It was described rather fully ... Specimens from Lower Calif. seem to fit Dall's description. There may be a question as to whether or not the specimens from southern California are exactly identical or whether they may possibly be a separate subspecies."

Our conclusion is to refer this species either to Botulina denticulata (Dall),1871 or Botulina sp. Keen.

Collecting data: Our experience has been that it is a dredged species coming from moderate depths. We have taken it rather frequently off Redondo Beach in the 25 fathoms gravel, and it was not uncommon in our dredgings from the deeper rocks, about 35 fathoms off El Segundo,Calif. We dredged it in both 40 fathoms and 20 fathoms off Monterey, Calif. (Burch) off Catalina Island in 30 fathoms (G. Willett).



Botulina coralliophaga (Gmelin),1792.
Sand Island,Florida. Koto.



Botulina denticulata (Dall),1871
El Segundo,Calif. 35 fathoms.

Genus Botula Morch,1853. Type (by subsequent designation, Dall), Botula fusca (Gmelin).
" Shell long,subcylindric or rhombic; beaks subterminal or subcentral."
Subgenus Adula H. & A. Adams, 1857. Type (by monotypy), Botula (Adula) soleniformis (d' Orbigny).
" Shell rhombic, with subcentral beaks; surface of valves polished, not incrusted. "
Botula (Adula) falcata (Gould), 1851. " Coos Bay, Oregon, to San Diego, Calif." (Dall). Type locality: Monterey, Calif.

This group with Lithophaga has been the subject of much speculation regarding the manner of boring in solid rock. The excretion of some acid to assist it in boring sounds logical but so far as reported to us no positive proof of this has been made.

B. falcata is distinguished from B. californiensis Philippi in that falcata has numerous transverse wrinkles in the dark brown periostracum. B. californiensis is shorter with more angular valves.

Collecting data: Boring in shale at San Pedro, Point Firmin, also La Jolla, Calif. Dredged in shale off Monterey, Calif. in 10 fathoms 8/37 (Burch)
Botula (Adula) californiensis Philippi, 1847. " Vancouver Island to San Diego, Calif.. North Japan" (Dall). Type locality: Vancouver Island.

This species is much more common in the northern part of the range. The predominant species in southern California being B. falcata. However, the species is taken in southern California.

Collecting data: Crescent City, Calif. and Agate Beach, Oregon 8/36, (Burch); San Diego, Calif. (Tremper) (G. Willett); Dr. A. Myra Keen reports that there is a tray of this species from San Diego in the Stanford Collection.

Genus Dacrydium Torell,1859. Type: D. vitrea Sars.
" Hinge crenulations tuberculiform anteriorly, elongate posteriorly" (Tryon)
Dacrydium pacificum Dall,1916. " Bering Sea, 1401 fathoms" (Dall).

Genus Lithophaga Roding,1798. Type (by monotypy), L. mytuloides Roding-- Mytilus lithophagus Gmelin.
" Shell cylindrical, inflated in front, wedge-shaped behind; epidermis thick and dark; interior nacreous." (Tryon S.S. Conch.)
" The wedge shaped posterior end of the shell serves to differentiate this genus from Botula." (Grant and Gale).

Subgenus *Diberus* Dall,1898. Type (by original designation), *L. plumula* Hanley " Shell with two or more radial sulci extending backward from the beaks; with a plume-like incrustation arranged in a distinct pattern on the areas between the sulci, and when projecting beyond the ends of the valves, opposed symmetrically."

Lithophaga (*Diberus*) *plumula* (Hanley),1844. Type locality: Panama.

This is the label we have been using for our common rock borer. However, we have been informed by Mr. A.M. Strong that our California species will shortly have a new name. Obviously we cannot use another name until it has been published but Mr. Strong has given us the following data which is self explanatory, " *Lithophagus calyculus* Carpenter, Mazatlan Catalogue, p. 124/ Carpenter states that the incrustation lies in a solid triangular layer over the posterior part, with the arrow headed lines pointing away from the vertex of the triangle. At the extremity of the beaks there suddenly appears a deep cup dividing the termination into two knobs. *Lithophaga plumula* (Hanley), Carpenter,Mazatlan Catalogue, p. 125. Carpenter states that the incrustation for the most part presents the arrangement of a featherin lines running out on each side of a mid rib which joins the umbo to the posterior end. The incrustation forms beaks beyond the shell, appressed but not prolonged or hollowed out. The difference in the incrustation shown by these descriptions form at least a varietal difference.Hanley's original description and figure of *plumula* is very similar to that of *calyculus* and the latter becomes a synonym of the typical *plumula* Hanley. The incrustations on our California shells is similar to *plumula* Carpenter,(not Hanley) and seems to be without a name. We will describe it as a new variety. Perhaps both occur here. We have the typical form from west Mexico and they appear quite distinct. I have seen nothing like them from California."

Collecting data: It is found boring in such mollusks as *Chama*,*Haliotis*, *Hinnites*, and other heavy shells as well as stone and shale. The bathymetric range is not known to us but we have dredged it from as deep as 20 fathoms off Monterey and 25 fathoms off Redondo Beach,Calif. (Burch).

Subgenus *Myoforceps* Fischer,1886.
" Similar to *Diberus* Dall, but the incrustation projecting beyond the ends of the valves is twisted."

Lithophaga (*Myoforceps*) *aristata* Dillwyn,1817. " La Jolla,San Diego Co., Calif. to Peru. Also Atlantic." (Dall). Johnson lists it from the Atlantic coast " North Carolina to the West Indies and Mexico".

Collecting data: We have specimens from the Caves at La Jolla,Calif. (Burch); early records show this species not uncommon on Deadman's Island, San Pedro Harbor, but this locality has been dredged away and there have been no recent reports from the San Pedro vicinity.

Subgenus *Labis* Dall,1916. Type (by original desig.), *Lithophaga attenuata* Deshayes. Dall in Proc. U.S.N.M. Vol. 52, pp 405-6 states " The typical *Lithophaga* has a clean outer surface; *Diberus* a divaricate posterior incrustation; *Myoforceps* , two crossed conical projections; the present form has on each valve a semicylindrical smooth appendageof which the distal end is internally flattened and somewhat separated from the appendage of the opposite valve, the ends being rounded."

Lithophaga (*Labis*) *attenuata* Deshayes, 1836. " Monterey to Patagonia" (Dall) The Monterey record of this species is subject to great doubt. H.N. Lowe and others report this species from west Mexico. However, I have never seen a specimen said to originate in California. Allyn Smith writes " Several lots in the collection of the California Academy, of which the most northerly locality is San Ignacio Lagoon,Mexico. It is not in our fauna."

Genus Modiolaria Beck,1838. Type (fide Stoliczkam1871),Mytilus discors L. " Shell rhomboidal,sculptured by two rows (one on each side of a lateral area) of striae, which radiate from the beaks, leaving the middle portion smooth; umbones incurved, hinge edentulous or crenulated, with the hinge plate finely notched. "

Here we have another dispute- Modiolaria Beck vs. Musculus Roding,1798 " Musculus Bolten being preoccupied by Thomas Martyn, Modiolaria takes its place" (Grant and Gale.). This conclusion has been accepted by the great majority of recent authors,; A. Myra Keen " Abridged Check List" 1937, Dr. Joshua L. Baily Jr. in " West Coast Shells", Johnson " Mollusca of the Atlantic Coast", Dr. Louise Perry, Maxwell Smith and other writing of the Atlantic fauna all have accepted Modiolaria. However, there is another group who reject all of Martyn's work thereby nullifying Musculus Martyn and leaving Musculus Roding the name for this group. Dall,Bartsch & Rehder in " Marine Molluscs of Hawaii" 1938 state this position as follows " This name (Musculus) has recently been considered to be preoccupied by Musculus Martyn 1787, but in our opinion Martyn's name is not available, his classification being non-Linnean." Several opinions on this matter follow. Dr. Joshua L. Baily Jr. (personal communication June 1944) " I used Modiolaria because I had not rejected Martyn. Dall used Musculus in Bull. 112, but restored Modiolaria in his supplement to Bull. 112. Dall,Bartsch & Rehder did not publish until after Dall's death, and I think that the rejection of Martyn reflects the opinion of Bartsch and Rehder rather than Dall. My feeling is that Martyn's synonymy (not his classification) is so confused that it is impossible to tell whether it is Linnean or not. To reject it because it is not Linnean is just as dogmatic as to accept it because it is Linnean. Until the International Commission has ruled on it, I feel that each one of Martyn's names must be acted upon separately. We do not have a copy here. Grant has one at U.C.L.A. He accepts Martyn. Pilsbry and Baker do not. If you have never seen a copy of Martyn I can tell you a little about it. His difficulty is not like that of Martini and Chemnitz. The latter authors used polynomials of so many terms that they are quite inconsistent with the Linnean system and so their work is naturally rejected. But Martyn frequently used a single word for a name. If he intended this for a genus, or for a species under some other genus, his work is Linnean, but if he intended to introduce a system in which some species would be called by a single word, then his work is not Linnean" But it is impossible to tell what he meant, and it may well be that we must accept some of his names and not others."

Dr. A. Myra Keen rejected a number of Martyn's names in a recent work " An Annotated Check List of the Gastropods of Cape Arago,Oregon" and we find her opinion on the matter of interest (personal communication June 1944) " The Martyn matter is a mess and will continue to be until someone formally petitions the International Commission for a ruling. The problem is: granted Martyn's specific names are non-binomial, must his generic names be rejected, also. A few years ago in another connection we received a partial answer from the Commission to the effect that generic names proposed by a non-binomial author might be valid provided they were binary (there's a difference, but dont lets get technical). Accodingly, pending a definite ruling, I have been accepting Martyn's genera (Purpura, for example) but disregarding his species. However, one of our students in mulling over the problem pointed out to me that part of Martyn's specific names were clearly binomial, part not. Some day I want to take time off to go over to our Rare Book Room, where Stanford's copy of Martyn is stored, and make a careful inventory of the names. In re Musculus, it would appear, from the policy mentioned above that we should continue using Modiolaria.."

Modiolaria nigra(Gray)1824. " Arctic Ocean to Oregon. Circumboreal" (Dall).
Collecting data: Kotchikan,Craig,Forrester Id.,Alaska (G. Willett); 20 fathoms in Puget Sound by Mr. Oldroyd (A. Smith); Kodiak Id. 15 fms., Montagu Id. 18 fms., Frederick Snd. 12 fms. (Lewis Coll.); Ishut Bay, Afognak Id., Hinchinbrook Id., (W. Eyerdam); Flensburg,Schleswig (I. Norberg) (Eyerdam); Whalerspynt, Spitsbergen (20-30 fsm. clay),1864 (Hans Schlesh) .

Modiolaria nigra obesa(Dall) 1916. " Arctic Ocean to Cape Flattery" (Dall).

Modiolaria protracta(Dall)1916. " Nunivak Island, Bering Sea to Monterey"(Dall
Note from Allyn Smith " Dall's Monterey record is an error, based on the misidentification of a worn specimen of Botulina opifex. I suspect the species is found only in the northern fauna."

Modiolaria olivacea(Dall)1916. " Bering Sea to Catalina Island,Calif." (Dall)
The Catalina Island record is probably an error also. No member of the club reports ever having seen a specimen from southern California. Reported by George Willett from Umnak Island, Alaska, dead on the beach.

Modiolaria impressa(Dall)1907. " Petrel Bank, Bering Sea" (Dall).

Modiolaria taylori(Dall)1897. " Victoria,Vancouver Island" (Dall).
Collecting data: Departure Bay, B.6. (G. Willett); Departure Bay, B.C. collected by Mr. Oldroyd (A. Smith).

Modiolaria substriata(Gray)1824. " Arctic Ocean to Puget Sound. Circumboreal" (Dall); Greenland to New York, 5-100 fathoms (Johnson).
Collecting data: Puget Sound(G. Willett); Punuk Island, Bering Sea, Nunivak Id., Bering Sea, 8-10 fathoms, Parlof Bay, Alaska 13-15 fathoms, Frederick Sound, Alaska 12 fathoms, Victoria, B.C. 10 fathoms (Lewis Coll.) : reported by W.J. Eyerdam- Izhut Bay, Afognak Id., 1922 and Elrington Id. 1924, W.J. Eyerdam on kelp holdfasts, Hinchinbrook Id., Norberg 1936, Chatanga Bay Arctic Ocean, Vega Expedition 1878.

Modiolaria corrugata(Stimpson)1851. " Arctic Ocean to Puget Sound. Circumboreal." (Dall); " Greenland to North Carolina 2-100 fathoms (Johnson).
Collecting data: Unalaska, 1932 (W.J. Eyerdam); Tromsosund, Norway,1935 (Norberg).

Modiolaria vernicosa(Middendorff) 1849. " Bering Sea to Sitka. Also Oshotsk Sea" (Dall).
Collecting data: Forrester Island and Umnak Island, Alaska (G. Willett); common on eel grass Mallard Bay, Knight Island 1923 and Thum Bay,Knight Id. 1939 and 1940 collected by W.J. Eyerdam; also Elrington Id. and Evans Ids., Prince William Sound (Eyerdam).

Modiolaria phenax(Dall)1915. " St. George Island, Bering Sea" (Dall).
Collecting data: Amaknak Id.,Alaska(G. Willett); Saltwater Lake, Amaknak Island from the Oldroyd collection (A. Smith).

Modiolaria marmorata(Forbes)1838. " Circumboreal ? " Puget Sound" (P.P.C.)((Dall). Sollecting data: Tromsosund, Norway,1935 (I. Norberg) (Eyerdam).

Modiolaria seminuda(Dall)1897. " Bering Sea to Forrester Island, Alaska" (Dall
Collecting data: Craig, Alaska in 20 faths. (G. Willett); Frederick Sound, Alaska (Lewis Coll.);

Genus Crenella Brown,1827. Type (probably by monotypy), Mytilus decussatus Montagu,1808.
" Shell oblong-oval, equilateral,ventricose; beaks obtuse, slightly turned to one side; hinge destitute of teeth, but with a flattened, horizontal slightly crenulated plate on one side of the hinge in each valve; right valve with a triangular, horizontal, projecting, reflexed plate, and the left one with an oblique plait, both of which are a little crenated externally.(Brownn)"

Crenella decussata Montagu,1808. " Bering Sea to Puget Sound and south to San Pedro,California; also Atlantic" (Grant and Gale); " Greenland to North Carolina, 5-124 fath. Circumpolar." (Johnson).
Collecting reports: Ketchikan,Alaska 25-30 faths. (G. Willett); Drier

Bay, Knight Island, Alaska dredged..1923 (W.J. Eyerdam); Hinchinbrook Id., Alaska, dredged..1936 (I. Norberg) (W.J. Eyerdam).

Crenella divaricata Orbigny, 1845. " Santa Barbara Islands to Panama Bay. Also West Indies. (Dall); " North Carolina to the West Indies." (Johnson).

In a preliminary note John Q. Burch wrote the following and received several different opinions. " Crenella decussata and divaricata make a very confusing group to me. Grant and Gale, 1931, state that divaricata is probably a tropical race of decussata. These small species of Crenella are very common in dredgings in comparatively shallow water, usually 25 to 50 fathoms and in mud. We have specimens in any number from off Redondo Beach, Catalina Id., San Diego, Coronado Islands, Ensenada, Mexico etc. I have on many occasions attempted to separate decussata from divaricata with poor success. Dall says of divaricata " This little shell is not to be distinguished, except by its nearly white color, from the young of C. decussata of the same size." My question is very simply this. What do you propose to do with a thousand of them coming up in the same dredge haul and nicely mixed from white to yellow to brown? " This note brought the following comments. " Small southern race of decussata" (George Willett). The following remarks came from Allyn Smith " C. divaricata- As we have concluded, this is only a Gulf and tropical species, not found in California. It is distinct from decussata, and is common in the Gulf. As a further check, we compared the Academy's lots of West Coast decussata with material from Europe and Florida. We believe all your specimens from Redondo are probably decussata." So if it is true that these species are clearly distinct, it is probable that the Burch collection does not have a set of true divaricata.

Carpenter made the following comment in his " On Mollusca of the West Coast of North America" 1863 " C. decussata Mont. Exactly accords with Atlantic specimens".

In studying this group we became interested in a southern species, C. inflata Carpenter, 1864. We know of no record indentifying this species as part of our fauna, but since we had some difficulty in getting the original description we shall reproduce it here for the convenience of any member interested in checking up on it. The original description was in Latin with a note as follows: " Crenella inflata Carpenter, 1864. Ann. Mag. Nat. Hist. ser. 3, vol. 13, p. 313. "? C. testa valde inflata, minuta, albida, subrhomboideo-orbiculari; diagonaliter parum producta; marginibus subquadrangulatim rotundatis; umbonibus prominentibus, valde antice intortis; tota superficie ut in C. decussata sculpta, costulis crebris radiantibus aequidistantibus, hic et illic aliis intercalatis; lirulis concentricis decussantibus: intus margine dorsali brevissimo, arcuato, dentato; ligamento curtissimo, in fossa omnino interna, celata, lamina definiente, sito; lamina cardinali sub umbonibus intus porrecta, dentibus validis instructa; marginibus internis omnino crenatis; cicatr. adduct. subaequalibus, vantraliter sitis. Lon. .1, lat. .12, alt. .09 poll." " Located provisionally in Crenella from its likeness to C. decussata, but with peculiarities of hinge and adductors which approach Nuculina on one side and Cardilia on another." Type locality: Cape San Lucas. Collected by J. Xantus.

The following comments on inflata were received. " This sounds most like C. d. divaricata of any of our California species, but, being from Cape San Lucas, it may be entirely different." (George Willett). " Collected by C.B. Adams, no location, p. 39" (Dr. Joshua L. Baily Jr.).

Carpenter's document "A" contains the following: " Valves, very rare. (An aberrant form). Also Panama, C.B. Adams".

Crenella leana Dall, 1897. " Aleutian Islands, eastward to Middleton Island Alaska" (Dall).

Crenella columbiana Dall, 1897. " Aleutian Islands to San Diego, Calif." ((Dall).

Collecting data: This species is easily identified. It is the largest of the genus, more inflated than the above species, and is of a greenish gray color. We have dredged it frequently in mud usually around 60 fathoms. We have taken it in considerable abundance in dredgings from 40 fathoms off Monterey, 25 to 50 fathoms off Redondo Beach, 50 fathoms off Ensenada,Mexico . It is not uncommon in the Pleistocene of Timm's Point, San Pedro. (Burch); Craig, Alaska, 10-25 fathoms, San Pedro, 10 fathoms, Catalina Island, 30 fathoms, Los Coronados Islands, 30 fathoms (G. Willett); Unalaska, Illuliuk Bay, dredged, 1932 (W.J. Eyerdam).

Crenella grisea Dall,1897. " Bering Sea to Sitka, Alaska" (Dall).

Collecting data: Forrester Island, Alaska, 30 fathoms (G. Willett).

Crenella rotundata Dall,1916. " Santa Cruz Island, Calif. in 155 fathoms"(Dall)

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Corrections and Additions

Mytilus dunkeri Reeve- " The Academy now has sets of Mytilus from La Jolla (Dr. Coe) and from Anaheim (E.P. Baker). It has a single specimen of dunkeri from Japan, which agrees with the type figure quite closely. The two shells are very different, the principle one being that dunkeri has a light pearly nacre on the inside that is not at all like the southern California shells called dunkeri. Also dunkeri has a more concave ventral margin and the umbones are almost hooked at this end of the shell. If what we have is really dunkeri then the southern California shells are not this species. Comparison of the latter with M. edulis galloprovincialis from the south of France show no differences whatever. If the two lots were mixed there would be no way to separate them again. Our conclusion is that your shells are M. edulis . If they were dunkeri, they would have to have been introduced, probably with Jap oysters (O. laperousii Schrenck). I know of no such commercial introduction of this oyster in southern California although it has been raised from spat from Japan at Elkhorn Slough in Monterey Bay and Drakes Bay. We have found no Jap Mytilus at either place yet in spite of the fact that Paul Bonnot of the Fish and Game Commission has been watching for it." (Allyn Smith, California Academy of Sciences, personal communication , June, 1944).

Dimya coralliotis Berry, 1944. Proceedings of the Malacological Society of London, Volume 26, part 1, May 4, 1944, pp 25-26. Type locality: 100 fathoms, in westerly direction 10 miles off Huntington Beach,Orange Co.,Calif .; specimen found adhering between the branches of a large Porosa coral (Dendrophyllia oldroydi Faustino) hauled up by Mr. Shelton, fisherman, c.1 March 1936. Holotype: Cat. No. 8435 Berry Collection. Measurements of holotype: Longest diam. 14.7, shortest diam. 10.3, width 4.6 mm.

There are four figures but they are so indistinct that they will be of little value in classification. However, Dr. Berry gives a very full and clear description of the species. One comment follows " .. but the more tangible and trenchant peculiarities of D. coralliotis may be summarized as the possession of a more rudely finished shell than D. californiana, with the upper surface of the left valve scurfy rather than laminated, attached only by about the umbonal quarter of the right valve, and with the muscle scars more nearly circular and otherwise different both in shape and position.

This species should be studied in connection with Dimya californiana Berry, which we discussed in our issue # 34 p 10.

Family PERIPLOMATIDAE

Genus Periploma Schumacher, 1817. Type (by monotypy), Periploma inaequivalvis Schumacher.

" Shell oval, very inequivalve, inequilateral, slightly nacreous; left valve deepest; posterior side very short and contracted; hinge with a narrow, oblique spoon-shaped process in each valve, and a small triangular ossicle; an internal rib proceeds from under the hinge to the posterior margin; muscular impressions unequal, the anterior long and narrow, theposterior small,semilunar; pallial impression marginal. Siphons long and slender, separate.(Tryon)

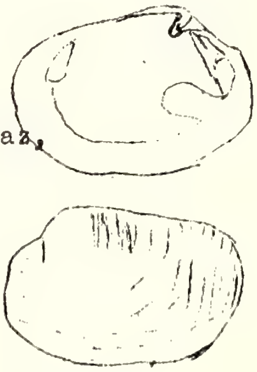
Periploma planiuscula Sowerby,1834. " Point Concepcion,Calif. to Guayquil" (Dall) " Negritos,Peru (Olsson, Naut. 57, p. 128)" Dall listed range San Pedro south. Type locality: Isla de Muerte,Guayquil. P. argentaria Conrad is a much used name in the synonymy of this species.

This is the common southern California Periploma. The habitat is evidently just below the low tide line. The shells are washed in by the surf not infreuqently still living, but I have never heard of a collector taking a littoral specimen in what seemed to be its natural habitat. It must be a very abundant species in the off shore reefs along the coast from Long Beach to Huntington Beach as it is usually possible to pick up dead valves by the hundreds.

Periploma alaskana Williams,1940. Pomona College Journal of Entomology,June, 1940. Type locality: Lat. 68 degrees, 37 ' north long. 168,53' west in 32 fathoms, fine mud bottom, Arctic Ocean and known to range to Mac-Leod Harbor,Montague Island,Prince William Sound, Alaska, in 25 fathoms shell bottom.

Periploma discus Stearns, 1890. Monterey,Calif. to La Paz, Lower Calif. The Hopkins Marine Station have specimens dredged in 20 fathoms in Monterey Bay, and H.N. Lowe listed it from the mud flats at La Paz. Dall gave the range as San Pedro to San Diego.

Collecting data: San Pedro Harbor, 10 fmd. mud (G. Willett); off Redondo Beach in 50 fathoms mud (Burch); in 1915 both Mrs. Eshnaur and E.P. Chace reported finding this species in some numbers after a storm on Terminal Island and at Seal Beach.



Periploma

Subgenus Halistrepta, Dall, 1904. Nautilus 17, p. 123.

" This species is, we believe, the first Periploma known to possess an undulated sculpture, and bears to those of the ordinary type such a relation as that of Cyathodonta to Thracia or Labiosa to Raeta."

Periploma sulcata Dall, 1904. Known only from the type locality, San Pedro Bay, Calif. This species was apparently described from one specimen washed in after a storm and found by Mrs. Oldroyd.

The only other record we know of is one specimen dredged off San Pedro by George Willett in 15 fathoms.

An interesting little note is at hand from Dr. Joshua L. Baily Jr, " Periploma is neuter. Should be P. planiusculum according to Berry." This is one for the Latin scholars. It is not the common usage.

Family Thraciidae

Genus Thracia Blainville, 1824 (Dict. Sci. Nat. vol. 32, p. 347). Type (fixed by Blainville, 1827, Man. Mal., vol.2,p. 660), T. corbuloidea Blainville. Note by Dr. A. Myra Keen " Unless this interpretation of the type is taken, under analogy with the case cited in Opinion 6 of the International Rules, the type of Thracia must be T. pubescens Pennant, by designation of Anton,1839. Blainville in 1824 proposes Thracia with two divisions, A and B, for which he cites as examples "T. corbuloidea" and " T. pubescens Leach", respectively. In 1827 he says that division B should be suppressed, as the species he previously cited was misidentified. This, it seems to me, could be construed as fixing the type in a manner acceptable under Opinion 6 of the Rules." Note that the author of corbuloidea is not Deshayes, as often cited."

" Shell rather thin, often bluntly rostrate; sculpture lacking or consisting of concentric striae, with or without concentric or oblique undulations, sometimes with fine granulations; beaks generally in contact, and one or both perforated (usually the right) by contact with each other. Size up to 100mm in length or more." (Grant and Gale).

Subgenus Thracia s.s.

Thracia (Thracia) trapezoides Conrad, 1849. Craig, Alaska to Redondo Beach, Calif. Described in " Fossils from Northwestern America", in J.D. Dana, U.S. Exploring Expedition ..v. under Charles Wilkes, vol. 10, p. 723, pl. 17, fig. 6a. Original description reprinted by Dall in U.S. Geol. Survey Prof. Paper 59, 1909, p. 153. Type locality: Astoria, Oregon,Miocene.

Grant and Gale give the range " Puget Sound (I.S. Oldroyd,1924); Craig,Prince of Wales Island,Alaska" (G. Willett)". However, Dr. Myra Keen in " Abridged Check List" brought the range down to Monterey, Calif. giving latitude 36 to 56. The Burches have dredged it in considerable numbers off Redondo Beach in about 75 fathoms mud bottom . This is a considerable extention of the range southward and would make Dr. Keen's range read 34-56.

The reason for discussing this species first is beacuse according to Grant and Gale, it is very close to T. corbuloides Blainville, the type species. It is well figured in Oldroyd " Marine Shells of the West Coast of North America" and also by Grant and Gale, 1931.

It is a common species in the Timm's Point Pleistocene of San Pedro.

Dall mentioned this species in writing of Thracia curta Conrad, " The fossil T. trapezoides Conrad is a more elongated shell". Grant and Gale state " This species is recognized by its rather short, broad rostration" and they emphasize this as a means of differentiating between T. curta and T. trapezoides. " The imperfection of the right beak is typical of Thracia" " Imperfect right umbones due to contact with the left beak."

Thracia (Thracia) curta Conrad, 1837. " Icy Cape, Arctic Ocean, Bering Sea, south to San Diego, Calif. (Oldroyd); San Hipolito Point, Lower Calif., Mexico (in Hemphill collection- Jordan); to Punta Penasco, Sonora,Mex. (Lowe- Trans. San Diego Soc. Nat. Hist. vol.8, no.6,1935)(with note from Dr. A. Myra keen on the Punta Penasco record " Corrected range: 23-71.I also found it there."

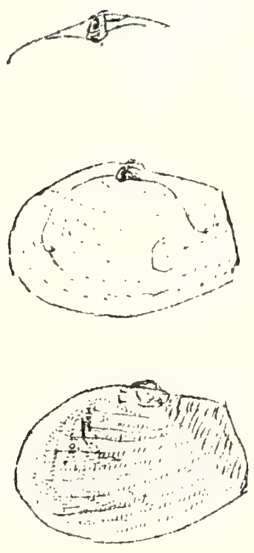
This species is not a common shell but has been taken by most littoral collectors to some extent. Our southern California specimens are quite small by comparison with specimens of the same species from the north. In fact, it would seem to be indicated that perhaps some of the northern records for this species should be reexamined for possible misidentification. The species is usually taken in crevices and other protected places. Our experience has been that it is very abundant for the species at San Onofre, Calif. in the rubble reef at minus tides. We have also collected it from many other points in the littoral from San Luis Obispo county to Bird Rock, San Diego. We have taken it from wharf pilings on several occasions. We are not certain of the bathymetric range but have dredged it off Monterey in 20 fms. on shale.

W.J. Eyerdam reports having taken T. curta at, Drier Bay, Knight Island, Pr. Wm. Sound, 1923, dredged; Hinchinbrook Island & Atka Id. 1932 (Norberg).
Thracia (Thracia) beringi Dall, 1915. " Bering Sea, Aleutian Islands and south to Sitka, Alaska" (Dall). Departure Bay (Taylor), to Puget Sound (Oldroyd). Type locality: Commander Islands.
Collecting data: Wislow, Unalaska Id., and Atka Id., 1932- not common(Eyerdam)
Thracia (Thracia) challisiana Dall, 1915. " Forrester Island, Alaska to Gulf of Georgia" (Dall); Keen " Abridged Check List" gives the range 37-55, and a note from Dr. Myra Keen " Collected at Monterey, Calif. by Mackenzie Gordon. Oldroyd also gives Monterey.

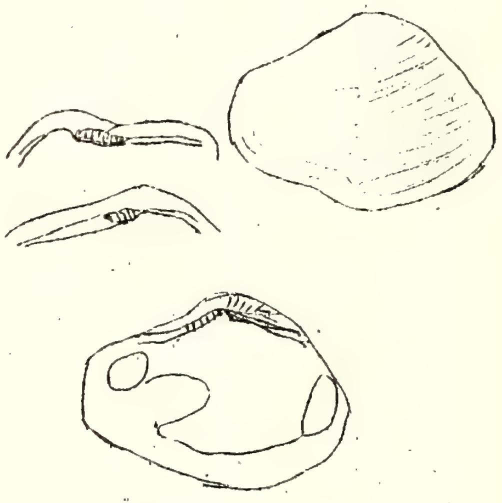
Collecting data: Craig, Ketchikan, Forrester Island, Alaska in 25-30 fms. (G. Willett).
Thracia (Thracia) diegensis Dall, 1915. " San Pedro Bay, Calif. to Magdalena Bay" (Dall). Type locality: " San Diego Bay, in 1 to 5 fathoms, sandy mud, very abundant" (Dall).

Our collecting experience has been to find this little species quite rare. We took it from the mud around the bridge pilings in Anaheim Bay, 3/38 and later dredged it off Ensenada, Mexico in rather deep mud probably 20 and 35 fathoms. (Burch).

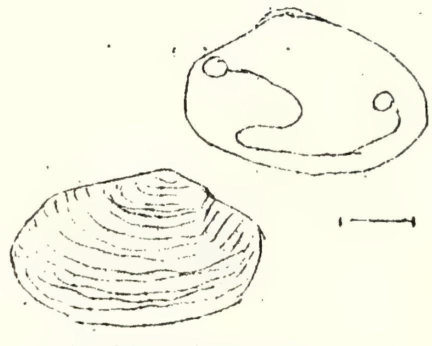
Our collecting reports on this species are ommitted in this report pending further study. Several of the club members have sets labelled Asthenothaerus villosior Carpenter that are certainly the same species others have been calling diegensis. Several of the members have made comments as Mr. George Willett ". Same as Asthenothaerus villosior Carp."?



Cyathodonta



Thracia



Asthenothaerus

Note from Dr. A. Myra Keen regarding the figure in her " Key to Pelecypod Genera" crudely traced above," The figure in the Pelecypod Key was obtained from U.S. National Museum and is of the holotype."

Genus Cyathodonta Conrad,1849. Type (by monotypy), Cyathodonta undulata Conrad. Original description of genus " An inequivalved bivalve; hinge with a broad not very projecting cartilege fosset, which is carinated near the margin; muscular impressions rounded, indistinct; pallial impression with a large rounded sinus."

Grant and Gale, 1931, say " Shell much like that of Thracia s.s. but with prominent, obliquely concentric undulations". And Grant and Gale make it a subgenus of Thracia. However, the general usuage has been to consider Cyathodonta a distinct genus and there are other differences in addition to the undulations. Grant and Gale state " This imperfection of the right beak is typical of Thracia s.s. , but Cyathodonta has an entire right beak or but a small eroded hole on most specimens. The ligament of Cyathodonta is internal on a definite chondrophore, while the ligament of Thracia corbuloidea and Thracia trapezoides is external". A note from Dr. Joshua L. Baily Jr. on the genus vs. subgenus matt er " This is a matter of personal taste. I think we have too many genera, and would make Cyathodonta a subgenus. But probably most people would agree with you." We are disposed to give it generic standing.

Cyathodonta undulata Conrad,1849. Monterey, Calif. (collected by Mackenzie Gordonand recorded by Dr. A. Myra Keen) to Tres Marias Islands, Mexico (record by Strong a nd Hanna).

Dall (Proc. U.S.N.M. vol. 49, p. 444, 1915) gives the distribution of this, the type species of the genus as " La Paz and other localities in the Gulf of California". Then in the same publication on page 445 Dall described C. dubiosa and C. pedroana. Conrad did not figure the species in his original description. Grant and Gale, 1931, state that southern California shells fit Conrad's description of undulata and " we do not believe that the distinctions Dall has used for separation of dubiosa and pedroana as full species are significant." So Grant and Gale list Dall's species in the synonymy of undulata as the only distinct species on the California coast. The preponderance of oponion seems to favor this conclusion. Note on the matter by Mr. George Willett of the Los Angeles Museum " Cyathodonta undulata Con.(plus C. dubiosa,plus C. pedroana Dall)." Dr. A. Myra Keen (personal commun. July 1944) " I have compared our Gulf and Lower California specimens with San Pedro and San Diego material and am ready to concede that only one biologic entity is involved. The size and position of the pallial sinus is variable, as are outline,convexity, and sculpture. The name, of course, will be undulata." However, there are those who disagree. A note from Dr. Joshua L. Baily Jr. states " In 1932 Grant told me that he now considered undulata and dubiosa distinct,and that dubiosa alone was found in Alta California. I would follow him." Dall states that undulata from La Paz etc. " The pallial sinus is rounded and high, reaching the vertical from the beaks" , and for both dubiosa and pedroana " pallial sinus is not so high relatively and falls short of reaching the vertical of the beaks". Dall in Bulletin 112 gave the range of dubiosa " San Pedro to San Diego and the Gulf of California, thereby overlapping his range of undulata. In the description of C. pedroana Dall stressed differences in shape anf sculpture in comparing with dubiosa " more pointed behind" " plaits are more numerous (25), narrower,more close set, and more regular" " reach the posterior dorsal margin". Pedroana is described as a smaller shell.

Orcutt in his " Molluscan World" and others have listed Cyathodonta plicata Deshayes from the California coast. Grant and Gale say that plicata is more elongate than undulata. However, Dr. Myra Keen (Per. Comm. July 1944) disposes of these records as follows" C. plicata (Deshayes) was described without locality; afterward Deshayes attributed it to West Africa, but other authors have identified it as Indo-Pacific,Caribbean, etc. etc. ".

Genus Asthenothaerus Carpenter,1864. Type: A. villosior Carpenter.
" Shell like a Thracia, hinge without teeth, spongy cartilage situated in a pit under the umbos." (Oldroyd).
Asthenothaerus villosior Carpenter,1864. " San Pedro, Calif. to Cape San Lucas" (Dall). Type locality: Cape San Luças, Lower California, Mexico.

As stated above in the discussion of Thracia diegensis Dall, many of the members are confused in regard to this genus. It is either extremely close to Thracia s.s. or else the sets in local collections labelled Asthenothaerus are not that genus. A further report must be made after more information is on hand.

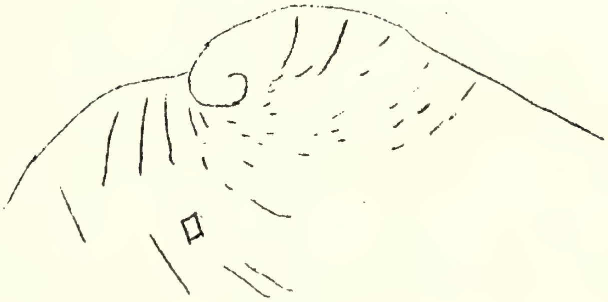
Family PANDORIDAE
Genus Pandora Bruguiere,1797. A number of authors including Dall in Bull. 112 and followed by Grant and Gale and others, have given the genus Pandora Hwass in Chemnitz,1795. Dr. A. Myra Keen (Per. Comm. July 1944) " Until a ruling by the International Commission has been made on Chemnitz, it is better not to accept his names. Therefore the citation should be: Pandora Bruguiere,1797 (Encycl. Meth. livr. 2, p. 250) (genus without species; type fixed by Lamarck,1799-- Pandora inaequivalvis (Linne)." This is used by Tryon,Oldroyd etc.
" Shell inequivalve, thin,pearly inside; valves close, attenuated behind; right valve flat, with a diverging ridge and cartilage furrows; left valve convex, with two diverging grooves at the hinge; usually no ossicle; pallial line slightly sinuated. Outer layer of regular vertical,prismatic cells".
Subgenus Pandora s.s. " Right valve with two cardinals; left valve with one obscure cardinal or none; lithodesma absent; right valve with feeble concentric sculpture." (Grant and Gale). The typical is not represented on the California coast.

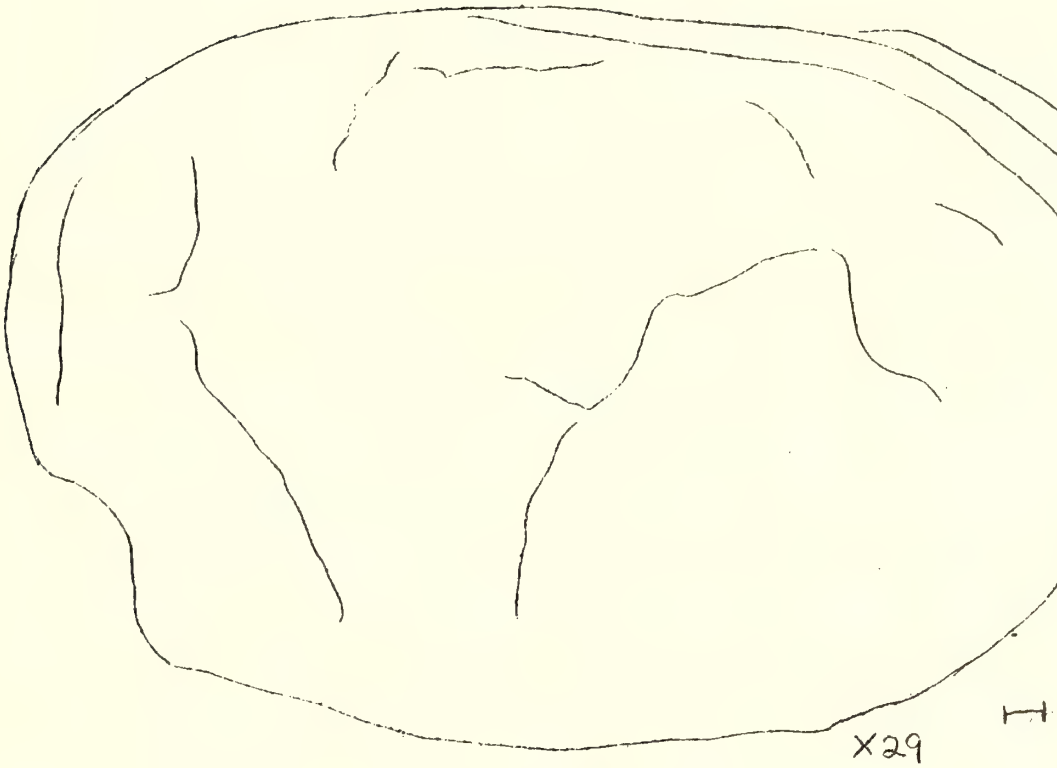
Subgenus Kennerlia Carpenter,1864. Type (by subsequent desig. Dall,1903), K. filosa Carpenter.
" Like Pandora s.s., but with a lithodesma; right valve with fine but widely spaced and somewhat irregular radial striae."
Pandora (Kennerlia) grandis Dall,1877. " Pribilof Islands, Bering Sea, to Siletz Bay,Oregon." (Dall). Type locality: Unalaska.
" recognizable by its large size, curved dorsal margin and lack of rostration" (Grant and Gale.)

Collecting data: Wrangell,Alaska, 50 fathoms in mud (G. Willett); San Juan Islands and Victoria, B.C. in sandy mud (W.J. Eyerdam); specimens up to 45 mm. in length, Orca, Pr. Wm. Sound (Norberg) (Eyerdam).
Pandora (Kennerlia) forresterensis Willett,1918. " Forrester Island,Alaska 50 fathoms (Dall); Ketchikan, 20-30 faths., (G. Willett); Prince Wm. Sound 18 fathoms, Frederick Sound, 12 fathoms (Lewis).
Pandora (Kennerlia) glacialis Leach,1819. " Arctic Ocean and south to Fuca Straits; also Atlantic" (Dall). On the Atlantic " Arctic Ocean, Gulf of St. Lawrence and off Martha's Vineyard, Mass. 45-100 faths." (Johnson). Type locality: Greenland. " ... the right valve has two or three posterior radial plications and a broad sulcation ventral to them" (Grant and Gale).

Collecting data: Storfjord, Spitzbergen..5-10 fms. clay (Eyerdam coll.)
Pandora (Kennerlia) glacialis eutaenia Dall, 1915. " Port Etches and eastward at Sitka, Alaska," (Dall). " ... a more rostrate posterior end and averaging larger than the typical form." (Dall).

Pandora continued in next issue.





We recently received an interesting set of five specimens from Mr. and Mrs. E.P. Chace along with the following note: " Dear John: In line with your policy of bringing bits of information out where they may be used, here is a scrap. Some years ago (1933) when we were collecting at Crescent City,Calif. we found several specimens that we have referred to as Pleuro--branchus sp. It was a white ' slug' laughingly described as looking like a Diadora aspera which had taken off its shell and gone for a walk in its skin. Its shell was an internal plate so fragile that we never succeeded in getting really good material. The genus has not been recorded from so far north, but we found specimens in tide pools and under rocks, some in Nov. and some in June, so apparently they are not seasonal visitors."

Two species of the genus Pleurobranchus Cuvier,1804 have been des-

-cribed from this coast, P. californicus Dall, 1900 and P. digueti Rochebrune,1895. The most northerly record for either species is San Pedro, Calif. Crescent City is an extention of range of some 700 miles. Dall described P. californicus without a figure in Nautilus 14, p. 92, but the description is rather clear and the comparison with P. digueti makes it certain that these shells are either P. californicus or a new species. Both animal and shell seem to fit the generic description very well. However, they do not seem to exactly fit Dall's description of P. californicus even though they do answer some of the characters such as "... and covered with a very thin periostracym which reflects nacreous tinges of color". These shells are in shape squarish oblong. They are thin and membraneous, semi transparent, and as mentioned above somewhat irridescent. The concentric sculpture consists entirely of elongated depressions. The sculpture is of small pits on the surface, and the background of tiny pits of varying size and shape. The extreme fragility of the shell is vividly shown by the numerous healed fractures in the shell. The figure was drawn by Thomas A. Burch. It is my opinion that this is a new species and should probably be called Pleurobranchus chacei, but in order to establish this some student of anatomy should make a study of the animal. It is unfortunate that the Chaces neglected to preserve some of the animals in liquid.

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The Journal of Conchology (the Organ of the Conchological Society of Great Britain and Ireland) , Vol.22, No. 4, April,1944, has been received. It contains a number of very fine papers but nothing pertaining to the fauna of this coast.

Revista De La Sociedad Malacologica " Carlos De La Torre", Museo Poey, Universidad De La Habana. This publication from Cuba, in Spanish, is very good indeed. The most recent issue, Vol. 2, Num. 1, Mayo,1944 is at hand. The issues have been averaging between 36 and 40 pages each. The plates are clear and the work very well done. Many new species are described from the West Indian fauna and this publication must be indispensible to the student of that fauna. We have received the publication to date and are most grateful for it. However, it does not appear whether or not it is open to subscription or purchase by the public.

" Some Notes Upon West American Turrid Mollusks" , Proceedings of the Biological Society of Washington, Vol. 57,pp 25-30, June 28,1944 by Paul Bartsch has been received. This paper is of particular interest to us because all of the genera and species are from this coast. One new species Antiplanes major Bartsch, 1944 is given a range from Bodega Head to Point Loma Light House in from 43 to 278 fathoms. Most of us have specimens of the species of Knefastia olivacea (Sowerby) in our collections under the label Pleurotoma olivacea etc. Dr. Bartsch separates typical olivacea as being confined to the Panamic section and gives the shell most of us have from Guaymas, Mexico and the Gulf of California, the new name Knefastia dalli Bartsch, 1944. Dr. Bartsch also describes a new genus Imaclava ranging from the Gulf of California to Panama.

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Mr. and Mrs. F.K. Hadley, Box 33, West Newton, Mass. " We just recently returned from a collecting trip on Cape Cod. The weather was ideal and the water simply grand. We had good collecting too, which made a perfect trip. I am always glad to exchange New England material with anyone interested. Dr. B.R. Bales,Circleville, Ohio. Here's a line from Doc's latest letter good for a laugh, " Boy, I can just see those collectors congregating on the street corners or shouting from the court house steeple if a single subspecies is left out, and believe you me some of the subspecies are plenty sub, in fact some are sub sub."

It is with deep regret that we announce the death of John H. Clarke, one of our most enthusiastic members. Mr. Clarke was but 56 years of age and passed away from a heart attack. He was a newspaper man all of his life and recently has been one of the editors of the Los Angeles Daily News. In World War I he was an infantry captain. He was engaged to be married to Miss M. Holloway of Auckland, New Zealand.

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New Publications

Johnsonia, No. 13, " The Family Cardiidae in the Western Atlantic" by W.J. Clench and L.C. Smith. This issue is in 32 pages including 13 plates and many figures. This paper will be of particular interest to those of us who have been having some difficulty with the nomenclature of this group. Generic descriptions and comparative notes are very complete. This seems to be our introduction to Lillian Cassat Smith, Assistant, Department of Mollusks, Museum of Comparative Zoology. We wish to congratulate her for her part in this fine work.

Proceedings of the Malacological Society of London, Vol. 26, part 1. Of particular interest to us in this issue is an article by Dr. S. Stillman Berry " A Second Californian Dimya". Dimya coralliotis Berry 1944 with type locality, 100 fathoms in westerly direction 10 miles off Huntington Beach, Orange Co., Calif. The large paper in this issue is " Aplysiids From the Indian Oceanm With a Review of the Family Aplysiidae" by N.B. Eales.

A fine article on slugs by Dr. W.H. Lange Jr. entitled " Land Slugs in California" appeared in the latest Bulletin of the Southern California Academy of Sciences, Vol. 43, Part 1, pp. 33-40, Jan.-Apr., 1944.

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Dr. W.O. Gregg, 2200 S. Harvard Blvd., Los Angeles 7, Calif. We have good news from Doc. We need his help. " However, I now have other problems sufficiently cleared away so I can review my marine shells and bring the nomenclature up to date. Will spend part of my conchological effort on marines and keep up with our programs."

Pvt. Walter C. Caldwell, Co. B, 2nd Pltn., A.S.T.P. Unit 3857, Baylor University, Waco, Texas. " I would like to take this opportunity to thank you for sending me the " minutes" each month. Next to active collecting there is nothing more enjoyable than reading about other collectors and I look forward to receiving each issue.

Dr. S.F. Light, University of California, Department of Zoology, Berkeley 4, Calif. We are honored to have the following note from Dr. Light. " I have enjoyed the Minutes of the Conchological Club of Southern California and am heartily in sympathy with what you are doing. I am inclosing a dollar to help pay expenses, My copy goes to several of our graduate students who are interested in marine zoology. More power to you."

Los Angeles Public Library, 530 South Hope Street, Los Angeles 13, Calif. " We wish to acknowledge with thanks the free subscription to the Minutes of the Conchological Club of Southern California. We shall greatly appreciate receiving later numbers as issued."

Walter J. Eyerdam, 7531 19th Ave., N.E., Seattle 5, Wash. The following note from our good member Eyerdam is of interest because it has been our policy to more or less ignore both the strictly Arctic species as well as the records. " I think it is important to include the Arctic and north European ranges if any one has specimens from definite localities because so little data is available. I think it would be very interesting to know more about the shell fauna of Arctic Canada and Arctic Siberia".

A.S. Duckworth, Southeast Missouri State Teachers College, Cape Girardeau, Mo. has been receiving sea shells sent him by his son from the south Pacific. The dirth of good literature on this fauna is distressing at this time.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

August-September 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

Any institution or library interested in filing these minutes is welcome to all available back issues and a place on our mailing list without charge. Students of particular problems are always welcome to ask us for specimens for study as well as all information we may have.

The next meeting will be held September 3, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the first sunday of each month.

Please note the new address of the editor of these minutes. Mail all news about shells, shell publications, shell collectors, shell trips, localities etc. to,

John Q. Burch,
4206 S. Halldale Ave.,
Los Angeles 37, Calif.

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We have had considerable correspondence recently with our friends in Cuba. In last month's minutes mention was made of the very fine publication Revista De La Sociedad Malacologica " Carlos De La Torre". Since that time we have received a statement offering subscriptions to those interested as follows: " Subscription fees to our Malacological " Revista", copy of which is inclosed, is $2.00 (Two dollars, U.S. Cy.), for 4 numbers, payable in advance that is, $0.50 per copy, including postage expenses. Members wishing to subscribe to this periodical will send their remittances to Dr. Carlos G. Aguayo, Director, Revista de la Sociedad Malacologica "C. de la Torre", Museo Poey, Universidad de la Habana, Habana, Cuba.

We also have a letter from Dr. Raul P. Guitart, Kate Plummer Bryan Memorial School, Guines, Cuba. " Thanks for the minutes of your club. They are very interesting. Kindly place me on your mailing list and let me know what my contribution shall be financially. As president of the Sociedad Malacologica " Carlos de la Torre" of Cuba, I express the desire of our members for closer relations and exchanges with your club."

Of course, we are happy to send our papers to Dr. Guitart with no contribution even suggested.

Mr. Jose A. Freire, Heredia 305, Santiago de Cuba, Cuba. Mr. Freire is interested in exchanging with our members, and sends out beautiful first class material. We have just completed an exchange with him and have his fine shells at hand.

However, there is one troublesome feature connected with dealing with our Cuban correspondents. Of all the nations on earth Cuba is the most difficult to ship an exchange box of shells. Back before the war Italy was a close second. Before anything can be placed in the parcel post or registered it is necessary to get a consular invoice. This involves searching out the nearest consulate of Cuba which may be many miles distant, paying a fee for this service, and in brief if you get your package mailed the first day you are very fortunate. If there is any possible way out of this difficulty we will be very happy to hear of it.

Mr. A.G. Stevenson, 32 Pentland Ave., Mt. Eden, Auckland S2, New Zealand. We were happy to have a long letter from Mr. Stevenson who has exchanged with a number of our members, and will, of course, be honored to add his name to our mailing list.

Professor A.S. Duckworth, Southeast Missouri State Teachers College, Cape Girardeau, Missouri recently sent us a box of interesting shells collected by his son on Midway Island. Dr. H.R. Hill of the Los Angeles Museum, our expert on this fauna kindly classified them for him and returned them to him.

Miss Mavis Holloway, 32 Pentland Ave., Mt. Eden 2p Auckland, New Zealand. It has been some time since we heard last from Miss Holloway from whom we have many fine specimens in our collection. This is finely explained by this note " For close on two years I have been doing voluntary work 5 days a week for the A.R.C. at one of your big naval hospitals- last year I did 1160 hrs. These were exclusive of numerous shopping excursions for patients and travelling time." We shall certainly try to complete her file of these Minutes.

Gillett Bechtel,619 Victoria Ave.,Venice, Calif. It has indded been some time since we have seen or heard from our good member Bechtel. We hope that he will keep his promise and attend the meetings soon. He has been getting some interesting new material from Hawaii.

Bob Edmonds - his present address is a military secret but how our member does get around. His father and mother, Mr. and Mrs. E.V. Edmonds at the last meeting had an interesting box of land shells including at least three or four species that Bob had collected and sent home from Algeria although the last news from him was from India. Bob is in the army.

Morris E. Caruthers, 120 E. Chestnut St., Glendale 5, Calif. Well it was certainly worth while changing the time of our meetings in order to have the old master back with us again. The last meeting was quite a reunion.

Dawson's Book Shop, 627 South Grand Ave., Los Angeles 14,Calif. Your reporter dropped into Dawson's shop last week and looked over some very rare and very interesting old books. Among others of particular interest to the collector of rare works on conchology was a set of 3 large volumes bearing the dates 1764-1773, by George Wolfgang Knorr " Collection Des Differentes Especes Dequillages Qu'on Trouve Dans Les Mers Rassemblee & Comunquee Au Public" The work has 226 superb colored engravings. Was published in Nuremburg. The price was $225.00. Another set of books that should be available to students of our own fauna is the " Report of Explorations in California for Railroad Routes". We not infrequently get references to these books and they are not available in many libraries.

Mrs. W.V. Hadfield, Private Bag, Takaka, New Zealand. Mrs. Hadfield is busy with war work now but when we are again able to resume exchanging her correspondents will find that she can send deep water species not generally offered by other New Zealand collectors.

F.M. Bayer, A.A.F. Base Unit, Second Squadron, Daniel Field, Georgia. We were glad to hear from Ted again. He has recently been on furlough and did some collecting in his old haunts around Lake Worth. Ted has some interesting theories regarding the genus Papyridea, but in proper time assume he will tell us all about them in some publication.

Mrs. J.M. Hackney, 1333 Cornwall Place, Norfolk 8, Virginia. " I have been busy wrestling with radulae. I had to start from scratch on the subject, and I ran into a lot of pitfalls- but it's fun, and I hope to have a nice collection of slides before long. You may be interested to know that I got one or two out of some of the shells that I got from you. They looked hopelessly dried up at first, but after a good soaking and a little boiling in potassium hydroxide, there they were, as good as new."

Tom Burch has an extensive collection of radulae also. I think it might be a good idea if both Tom and Mrs. Hackney would write up an account of just how they work and let us run them in these minutes.

Pandora (Kennerlia) filosa Carpenter,1864. " Nunivak Island, Bering Sea to San Pedro, Calif." (Dall). To Ensenada, Lower Calif., Mexico, dredged in 50 fathoms 8/1938 (Burch).

" The posterior dorsal margin is approximately straight. The posterior end is definitely attenuated into a rostrum" (Grant and Gale).

Type locality: Puget Sound

Collecting data: Off Redondo Beach, Calif. in 75 fathoms mud and off Ensenada,Mexico in 50 fathoms mud (Burch); Kodiak Id.,Alaska in 15 fath., Prince William Sound, 18 fathoms (Lewis) (Willett); Craig, Ketchikan,Alaska in 20-40 fath., Newport Bay, Calif. in 30 fath.(G. Willett); Smith's Cove, Seattle,Wash. Harbor in 10 fathoms mud,1919, Izhut Bay,Afognak Island, 1922 in 10 fathoms mud (W.J. Eyerdam); Monterey in 40-202 fms. (A. Smith).

Pandora (Kennerlia) bilirata Conrad,1855. " Prince William Sound,Alaska (Eyerdam, Nautilus v.51, p. 101)" to " Point Abreojos, Lower Calif." (Dall).

" This species differs from P. filosa by the rounded posterior margin, which in filosa is rostrated. The beaks are also nearer the middle in bilirata"

Collecting data: Dredged off Avalon,Catalina Island 8/36 in 25 fath., off Monterey, Calif. in 40 fathoms 8/37, off Redondo Beach,Calif. in 25 fath ., off Ensenada,Mexico in 50 fathoms (Burch); Ketchikan,Forrester Island,Alaska 20-40 fathoms (G. Willett); Drier Bay,Knight Island, Prince William Sound, in 10 fathoms mud (W.J. Eyerdam); off Monterey, Calif. 41-142 fathoms in mud,clay and gravel (A. Smith).

Pandora (Kennerlia) granulata Dall,1915. " Santa Barbara, Calif. to Guaymas Mexico and especially abundant at the type locality on muddy bottom in the vicinity of La Paz, Lower Calif." (Dall). ?

"... closely resembling in form bilirata,but much smaller, more translucent and of a greenish tint, with the base and dorsal margins more nearly parallel and with the elevated lirae of the posterior dorsal surface delicately granulated."

Collecting data: Note from Allyn Smith of the California Academy " No information, except that we question the California records". No member of the club reports having taken it.

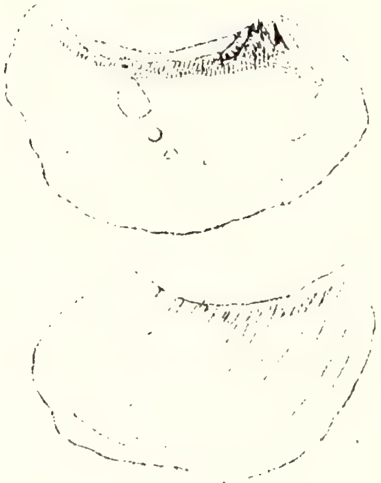
Subgenus Heteroclidus Dall,1903. Type (by original designation), Clidiophora punctata Conrad.

" Left valve with the posterior cardinal ridge or tooth absent; right valve with a short posterior cardinal and a produced anterior cardinal ridge ; both the anterior ridges or teeth, ending in front of the anterior adductor scar; lithodesma present."

Pandora (Heteroclidus) punctata Conrad, 1837. " Vancouver Island to the Gulf of California" (Dall).

" This species is readily recognized by its strongly curved (concave) posterior dorsal margin and the small punctations on the inner surface of the valves." (Grant and Gale).

Collecting data: This species is found in shallower water than any others of the genus and is not infrequently washed ashore. However, the habitat is below the lowest tide lines. We dredged it in some abundance though immediately on the seaward side of the Santa Monica breakwater in what could not have exceeded 3 or 4 fathoms. We have taken it as deep as 25 fathoms off Redondo Beach and about 15 fathoms off Ensenada,Mexico (Burch); off San Pedro in 20 fathoms (G. Willett); Clayoquat, Vancouver Island, British Columbia (W.J. Eyerdam).



Pandora

Corrections - Additions

The following notes (personal communication, July 22,1944) reached us after we had published our article on the genus Botulina. It is interesting to note that Dr. Harald A. Rehder, U.S. Natl. Museum, quoted below,came to the same conclusions reached by Dr. Hertlein and followed in our article.

" Gregariella (Monterosato (Naturalista Siciliana, vol.3, 1883, p. 90) (not Gregoriella; the name comes from its gregarious habits) has as its type Modiolus barbatellus Cantraine (-- M. petagnae Scacchi) . This is closely related to Botulina Dall, but has a somewhat weaker radial sculpture, particularly on the dorsal surface, and the internal ventral margin is smooth, whereas in Botulina it is denticulated; possibly Botulina might be used as a subgenus of Gregariella.

Lamy(Hourn. de Conch., vol. 81, 1937, pp.7,33) gives a diagnosis and discussion of this group. He places it erroneously, I believe, under Modiolaria (-- Musculus) as a subgenus, considering Botulina a synonym of Gregariella .

We have at least two species of Botulina in west Atlantic waters with quite different habits:

Botulina opifex (Say) makes a colonial nest of the agglutinated sand grains on a stone or very hard substratum, the dorsal surface lying flush with the outer edge of the nest.

Botulina coralliophagus (Gmelin),on the other hand, bores in coral or in sponges.

It would be interesting to know what the habits of your Californian species is, which, by the way, is not opifex (Say).

In regard to the group Hormomya, we are using it as a subgenus of the genus Brachidontes. "

I find the statement about the habits of the two species of Botulina in the western Atlantic of particular interest because our experience has been that our Botulina denticulata (Dall) has quite different habits than either mentioned. Our species is solitary. I never recall having taken even two of them together, have never observed anything resembling a nest, and they are neither nestlers or borers. It is true that they are usually taken on gravel,rocky, or shale bottoms but quite single and clean. Before making this statement I conferred with Mr. George Willett of the Los Angeles Museum who has dredged a great many of them. Mr. Willett's experience checks with mine. (John Burch).

Family LYONSIIDAE

" Shell rather small, elongate-ovate to suborbicular, or sometimes irregularly shaped, gaping, especially posteriorly, usually thin, white, yellowish or grayish; umbones submedian or anterior. The surface is covered with crowded radial rows of fine microscopic spines or nodules, which may dissopear in later stages; there are often rugòse concentric wrinkles and sometimes a few strong radial ridges; a more or less strong light to dark brown periostracum is present, which may be pinched up into slender radial threads. The ligament is internal and lies in a posterior groove and has an elongated calcareous body or lithodesma attached to its ventral surface. The hinge is toothless, although there may be a knoblike protuberance in each valve on the dorsal margin below the umbo. The interior is pearly, with a shallow pallial sinus, a nd with a posterior muscle scar slightly larger than the interior one" (Dall, Bartsch, Rehder).

Genus Lyonsia Turton, 1822. Type: Mya striata Montagu-- Mya norvegica (by monotypy).

Subgenus Lyonsia s.s. " Thin, elongated , with fine radial sculpture externally; periostracum inconspicuous, usually with more or less adherent sand; moderately inequilateral." (Dall, 1903).

The distinction between the subgenus Lyonsia s.s. and the subgenus Allogramma Dall is that the latter has strong radial undulations whereas Lyonsia s.s. is without them.

Lyonsia (Lyonsia) striata Montagu, 1815. " Circumboreal. Aleutian Islands to Fuca Straits" (Dall). Type locality: Atlantic.

There is some question about the exact identification and separation of this species. Mr. George Willett, of the Los Angeles Museum, suggests that it is possible that some of the specimens some of us have been labelling gouldii may actually be identical with this species. If this should prove to be true the range would be extended southward past San Pedro, Calif.

Collecting data: Kodiak Island, 15 fms. (Lewis); Forrester Island- Ketchikan, 15-40 fms. (G. Willett); Illuliuk Harbor, Unalaska Island, 15 fms. mud, 1932 (W.J. Eyerdam).

Lyonsia (Lyonsia) arenosa Moller, 1842. " Circumboreal. Arctic Sea to Japan and the Okhotsk Sea on the west and on the east to the Aleutians and Kodiak Island, Alaska" (Dall). Johnson gives the range in the Atlantic " Greenland to Cape Ann, Mass. 13-60 fath."

Collecting data: Cape Schelagskoi, Arctic Siberia, 12 fms. sand- Vega Exped. 1878 (W.J. Eyerdam).

Lyonsia gouldii Dall, 1915. " San Francisco Bay south to Point Abrejos, Lower Calif." (Dall), extended to Tres Marias Islands (Strong and Hanna). L. gouldii is the new name given by Dall to nitida Gould. Type locality: Santa Barbara, Calif.

We are not too positive about the classification of some of our southern California shells in this species. Mr. George Willett calls attention to the fact that whereas our shells seem to conform to the shape and in other particulars, Gould's original description calls for a smooth shell and all of our's are granulated. Therefore some of our records are included subject to correction.

Collecting data: Dredged off Avalon, Catalina Island in 25 fathoms 8/1937, off Redondo Beach in 30-50 fathoms 1937-41, off El Segundo in 35 fathoms, off Monterey, Calif. 10-20 fathoms (Burch); Catalina Island 30 fathoms, San Pedro 20 fathoms (G. Willett); Monterey, Calif. records 5-15 fathoms in sand-rare, (A. Smith);

Lyonsia (Lyonsia) californica Conrad, 1837. " Puget Sound to Manuel's Lagoon, Lower Calif., Mex. (Grant and Gale, 1931); Keen " Abridged Check List" gives lat. 24-56 which would take the range up near Sitka, Alaska. Type locality: near Santa Barbara, Calif.

Collecting data: Our common California species taken in mud bottom of all sloughs and bays such as Morro, Mugu, Alamitos, Anaheim, Newport etc. The bathy-

-metric range in our experience goes as deep as 40 fathoms off Monterey,Calif. 50 fathoms off Ensenada,Mexico, 25 and 35 fathoms off Redondo Beach and Catalina Island. More common in sandy mud bottom.(Burch); Craig, Ketchikan, Forrester Island, Alaska, 15-40 fms. (G. Willett); Elliott Bay, Seattle, Wash. 10 fms. mud,1921 (W.J. Eyerdam).

Lyonsia (Lyonsia) californica haroldi Dall,1915. Morro Bay, Calif. to San Francisco Bay. Keen " Abridged Check List" gives 35-38 which is about as stated. to Tomales Bay, Calif. (A. Smith).

Dall certainly gives very little description to this " A variety with nearly cylindrical form without arcuation from San Francisco Bay".

It has been our custom to label the shells taken from upper Morro Bay with this name. They are much larger than the typical californica averaging perhaps an inch or more in length and seem to lack the pearly appearance of the typical. It is probable that we have the same thing from Alamitos Bay and other southern California sloughs which would bring the range far to the south. (Burch).

In a preliminary discussion of this species John Burch made the following statement which brought up some interesting opinions and a decision which will have an effect on our future work. " Such things as haroldi cause me to wonder if there should not be a custom of indicating a mere form caused by the habitat rather than being distinct such as L. calif. var. haroldi Dall instead of writing it out as a subspecies. Of course, this may be a subspecies. It is easily distinguished from other shells of the same genus."

In answer to this Mr. Allyn Smith sent in the following note " While it is true that this is, as you call it, a " situs" form, found in shallow water in muddy bays, it is just this sort of a different environment that creates real subspecies over a long period of time. Personally, I think haroldi is a good subspecies. Your thought to use the term " variety" for such ecological variants is something I would steer away from, for two reasons-(1) it adds confusion to the definition of a true subspecies, unless it is considered to be a variant that is subordinate in position to a subspecies in the present nomenclatorial scale, in which case it (2) leads you into quadrinomials, which I believe hinders rather than helps, and is cumbersome, at best. Many older zoologists used the term " variety" when they really meant " subspecies". The reverse was also true, as you well know, with the result that in some instances it is now difficult to tell just what they really did mean. Consequently using this line of reasoning, I feel that color varieties have no real taxonomic standing in a faunal list and Mac and I have put them all into synonymy in our Monterey paper. "

This matter was discussed in open meeting of the club and the conclusion was to place all color forms and minor differences in the synonymy.

Lyonsia (Lyonsia) californica nesiotes Dall,1915. " Catalina and Coronado Islands, to Magdalena Bay" (Dall). Type locality: Catalina Island.

Dall's description ".. a very thin, smaller, and translucent form from Catalina and the Coronado Islands, with the beaks very close to the anterior end".

In a preliminary note John Burch stated " We have dredged shells from all around the channel, El Segundo,Redondo Beach,Santa Monica etc. that might or might not fit such a description. So far as I know it has never been figured anywhere." Mr. George Willett commented " This and all preceeding may be forms of striata, or, with exception of striata, may be forms of californica. Catalina Island, 30 fathoms". Mr. Allyn Smith writes " We have checked the Academy material with no better luck than you have in making a separation that would be satisfactory. We would put this subspecies into the synonymy with true californica."

Our disposition until some student can make a careful study of the type is to place this in the synonymy of the typical.

Lyonsia (Lyonsia) pugetensis Dall,1913. " Chignik Bay, Alaska to Puget Sound" (Dall). Keen " Abridged Check List" gives lat. 42055 which would be from about Cresent City,Calif. to Forrester Island, Alaska. Type locality: Queet's River, Wash. This is the largest described species.

Mr. George Willett makes the suggestion that this may be a form of californica.

Collecting data: Prince William Sound, Alaska, 18 fathoms (Lewis); Izhut Bay, Afognak Island, Alaska, 10 fathoms, 1922 (W.J. Eyerdam).

Subgenus Allogramma Dall,1903. Type: Lyonsia formosa Jeffreys (by orig. desig. " Valves with radial and vertical undulations, gaping behind but not below; siphons very short, with a profusion of long, tentacular filaments and a slender, cylindrical foot." (Dall, 1903).

Lyonsia (Allogramma) amabilis Dall,1913. " Off Santa Barbara Chennel, Calif. 534 fathoms".

Genus Entodesma Philippi,1845. Archiv. fur Naturgeschichte, vol.11, pt.1, p. 52. Type (by monotypy): E. chilensis Philippi,1845 (genotype figured in vol. 13, pt.1, pl.3, fig.10,10a).

" Testa bivalvis,transversa, inaequilatera, epidermide crassa vestita, subhians; cardo edentulus; ligamentum (cartilagineum) internum, in utraque valve prominentiae semilunari, longitudinali insertum. Impressiones musculares .."

Tryon, Manual, Vol. 3:146- " Shell thin, Saxicava-shaped, slightly inaequivalve and gaping, covered with a thick epidermis; hinge edentulous; each valve with a semicircular process containing the cartilage. Ossicle and pallial impression not observed."

The above generic descriptions are of interest because Entodesma was considered a subgenus by Mrs. Oldroyd and others and no descriptions were given in her work. The consensus of opinion seems to be that it should be used as a genus although Thiele and many others consider it a subgenus of Lyonsia.

Entodesma (Entodesma) inflatum Conrad,1837. " In sponges, Vancouver Island to Guayaquil " (Dall). Keen " Abridged Check List" gives the range 2955 which would bring the northern end of the range up to Forrester Island, Alaska. Type locality: Guayaquil,Ecuador.

Dall states that the habitat of this species is " in sponges or the mass of compound ascidians". Our experience has been that we have dredged it rather common off Redondo Beach, Calif. usually in 20 to 25 fathoms in both sand and gravel bottoms, and we also dredged it rather common off Monterey, Calif. in as deep as 40 fathoms and also on the shale bed off Del Monte, Calif. in 20 fathoms or less. Many of these specimens came up with nothing to indicate that they were associated with either sponge or ascidians. (Burch). In this connection the following note from Mr. Allyn Smith " We would like to see the northern record confirmed (i.e. Puget Sound and north). My experience at Monterey is that it is rare and not necessarily associated with sponge or ascidians." But to confirm the northern records Mr. George Willett has specimens personally collected at Forrester Island, Alaska in 50 fathoms. Mr. Willett also lists it from off San Pedro, Calif. in 20 fathoms".

In discussion of the allocation of Entodesma as a genus or a subgenus Mr. George Willett gives cause for serious thought with the following observation " Does not inflatum connect Lyonsia and Entodesma ? If so, Lyonsia should be used."

No doubt because this species was described as Lyonsia inflata several of our members have sets labelled Entodesma inflata which is incorrect. Dr . A. Myra Keen asvises us on Entodesma " As the Greek derma is neuter, the neuter endings- um or ense are required for species that are adjectives."

Subgenus Agriodesma Dall,1909. Type (by orig. desig. Entodesma saxicola Bair
The name Agriodesma was originallt used by Dall without description in Proc. U.S.N.M. vol. 37, No. 1704, p. 284, Nov. 1909 exactly as follows: "Entodesma (saxicola Baird) Carpenter -- Agriodesma Dall,1909, new name"

Dr. A. Myra Keen explains the matter as follows " Agriodesma Dall is a nomenclatural orphan but apparently was validly proposed. In the reference you cite Dall in effect says: " The Entodesma as used by Carpenter for the species saxicola Baird is incorrect and I propose the new name Agriodesma for this species. As you will see by consulting the International Rules, Article 25 and Opinion 1, this is a sufficient indication to validate the name. The differences between Agriodesma and Entodesma are the differences between the type species.

Thiele makes Entodesma and Agriodesma subgenera of Lyonsia , and distinguishes them thus:

" Entodesma s.s. Schale ziemlich gross und kraftig,aufgeblasen,Ligament lang, mit grossem Lithodesma.

"Agriodesma Dall,1909. Schale gross und dick, mit sehr kraftigem Periostracum, unten breit klaffend, Lithodesma sehr gross".

The principal difference between Thiele's characterizations would seem to be in the strong periostracum and the broad gape of Agriodesma."

Entodesma (Agriodesma) saxicola Baird,1863. " Aleutian Islands to Cape Colnett, Lower Calif. (Dall). Type locality: Vancouver Island.

" This enormous rude species, sometimes reaching nearly 6 inches in length (Dall). " The lithodesma is very large and strong and is inserted obliquely below the dorsal margin. The varietal name cylindracea Carpenter was given to specimens which had grown to fit borings of Lithophaga." (Dall).

Collecting data: Large specimens from the littoral rocks at low tide at Port Orchard, Puget Sound, Wash. 8/1936, Crescent City, Calif. in the same habitat, also found in the rocks at Monterey, Calif. Fine specimens taken from ships bottoms in dry dock at San Pedro. (Burch); common littoral species in southwest Alaska (G. Willett); Port Orchard, Kitsap Co., Wash, Izhut Bay, Afognak Island,1922, Drier Bay, Knight Island,1923, Sitkalidak Island,1931, Dutch Harbor and Unalaska in the Aleutians 1932. This species assumes many peculiar shapes according to its habitat. A specimen from Sitkalidak Island is heavily encrusted with nullipores. Most specimens are chitinous and crack all to,pieces when dry but I have some old specimens that were cast up on the beach that never showed signs of cracking.(W.J. Eyerdam).

Mr. Eyerdam also reports " Near Valparaiso I collected Entodesma chilensis Philippi, the genotype."

Entodesma (Agriodesma) scammoni Dall,1871. " Port Simpson, British Columbia (Scammon): San Diego (Orcutt)" (Dall).

" This species differs from all others in its brilliantly pearly interior , its oval shape, and its permanently adherent periostracum without radiating lines. Only the original specimens collected in 1865 have so far been obtained" (Dall).

Some careful student should study the types of this species. Most of us list scammoni with a question mark before and after. Mr. George Willett had a set so labelled when sent him but they were obviously Mytilimeria. The San Diego record by Orcutt is definitely questionable. Orcutt states of this find " One example found with the above species" and the above species mentioned is Thracia plicata Deshayes, an even more startling find and clearly not accepted. If anyone has any information regarding this species we will be glad to hear of it.

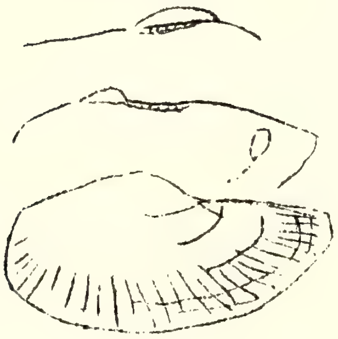
Genus Mytilimeria Conrad,1837. Type (by monotypy), Mytilimeria nuttallii Conrad.

" Shell rounded-oval, more or less ventricose, equivalve, fragile, ~~cover~~ covered by a thin caducous epidermis; beaks subspiral; hinge without teeth, but formed of small linear excavations under the beaks to receive the ligament which contains a small ossicle; muscular impressions small, pallial impression with an obtuse sinus" (Tryon).

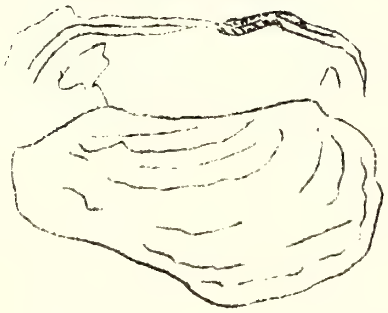
Mytilimeria nuttallii Conrad,1837. " Forrester Island, Alaska (Willett) to Round Island, Lower California (Jordan). Dall in Bulletin 112 under the range states " In compound ascidians". Dr . A. Myra Keen in " Key to West North American Pelecypod Genera" states under the habitat " Burroughing in such compound ascidians as Amaroucium californicum." And in a recent note Dr. Keen comments " The compound ascidian was identified for me at Hopkins Marine Station." However, several of our members are of the opinion that they have taken Mytilimeria from radically different appearing masses of ascidians indicating that it is not confined to the one species of ascidian. In 1915 Dr. Dall wrote (Proc. U.S.N.M. No. 2116) " It is by no means certain that this genus is properly placed here, despite its conchological characters. The little that is known of the anatomy rather points in the direction of Verticordia." However, Dr. A. Myra Keen (personal commun.) states " As to the propriety of allocating Mytilimeria here, the latest work on pelecypods by Thiele, places it in family Lyonsiidae, superfamily Pandoracea, and as Thiele studied soft parts as well as shells, the placement is probably correct."

Collecting data: Common under the rocks along the coast of San Luis Obispo county, Calif., dredged exceptionally large specimens off Monterey in 10-20 fathoms, always in the ascidian mass. Also taken from Bird Rock, San Diego county and elsewhere along the southern California coast. (Burch); Port Orchard, Kitsap Co., Wash. (W.J. Eyerdam); and as stated above Mr. George Willett's extention of the range to Forrester Island, Alaska.

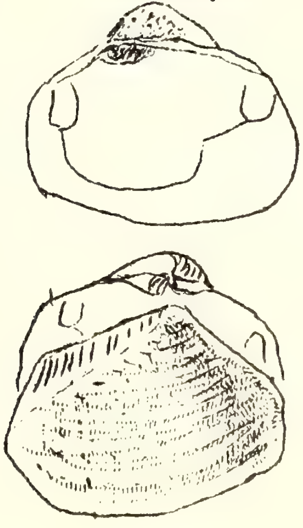
Lyonsia



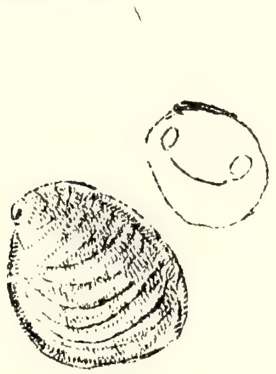
Entodesma

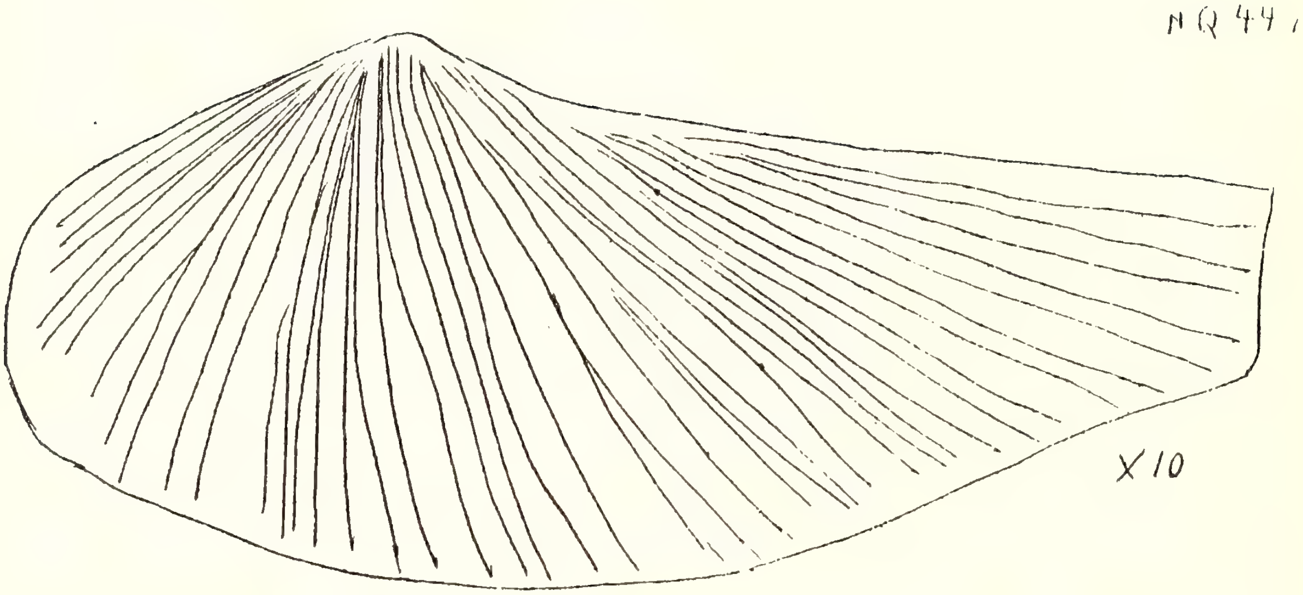


Dermatomya

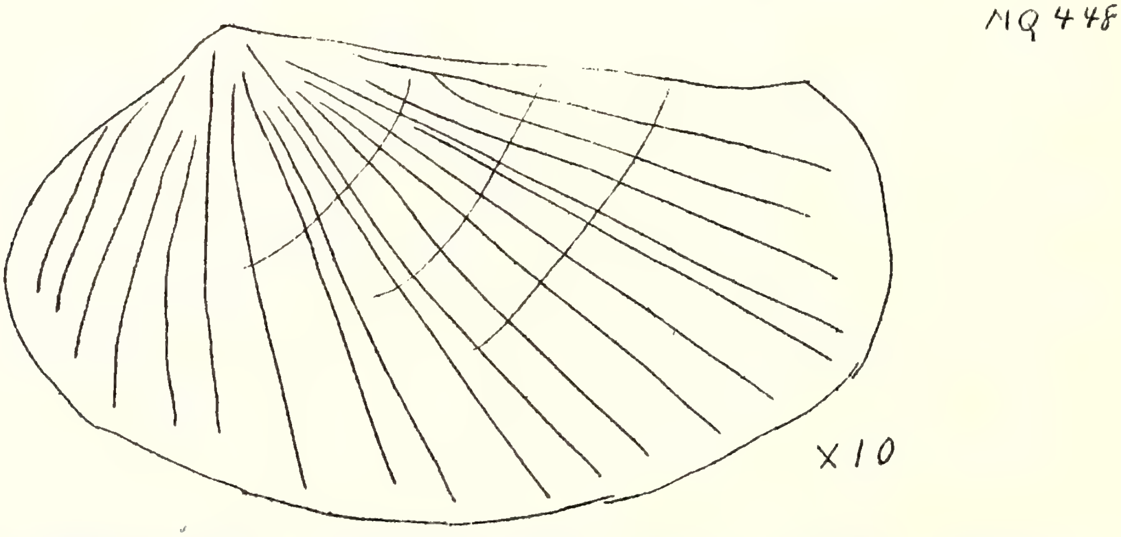


Mytilimeria





Lyonsia californica Conrad
20 fathoms, shale, off Monterey, Calif. 8/1940



Lyonsia striata Montagu ? Off Redondo Beach, Calif., 25 fathoms in gravel. 8/1939. This is the species we have been calling Lyonsia gouldii Dall. Other than the distinctly different shape the striations are farther apart. See note under gouldii.

Family POROMYACIDAE

Genus Poromya Forbes,1844. Type (by monotypy), Poromya anatinoides Forbes--granulata Nyst and West.

" Shell small,suborbicular or ovate, thin, inflated, gray or whitish, with prominent submedian umbones. The surface is microscopically granulate, and is covered with a thin yellowish periostracum. Ligament external. Hinge with a strong or sometimes rudimentary cardinal tooth in the right valve. Interior pearly, without a pallial sinus, and with the muscle scars subequal" Dall,Bartsch, Rehder.

The above description is included as a necessary part of a discussion of this group although the consensus of opinion is that Poromya s.s. is not represented in our fauna.

Genus Dermatomya Dall,1889. Bull. Mus. Comp. Zool., vol. 18, 1889, p. 448. Type (by monotypy) Dermatomya mactroides Dall 1889.

Dall in Bulletin 112, Mrs. Oldroyd in " Marine Shells of the West Coast of North America" and others used Dermatomya as a subgenus of Poromya. Some additional confusion has been added by giving the date Dermatomya Dall,1908.

Dr. A. Myra Keen (personal communication, July 1944) gives an explanation as follows and we are following her conclusions. " You will notice in the Pelecypod Key that we abandoned Poromya after examining figures of the genotype, as we could not key out our West Coast description using the description of Poromya. The first use of Dermatomya is in Bull. Mus. Comp. Zool., vol. 18, 1889, p. 448, where Dall says: " Poromya(Dermatomya) mactroides n.s. This fine species differs from the typical form of the genus in the absence of the superficial granulations, and in the presence of a deep and strong pallial sinus,which characters indicate that it should form a special section of the group. The hinge is also remarkably coarse and strong. It was dredged by the Albatross off the coast of Ecuador, in 741 fms., and externally presents much the appearance of a large high specimen of Mactra lateralis." On page 452 Dall gives a synopsis of the family Cuspidariidae, under which he lists, among others, the following genera:

" Poromya: teeth strong; oral palpi large; foramina of septum slit-like ... pallial sinus obsolete; surface of shell granular.

Subgenus Dermatomya: shell not granular; pallial sinus developed; hinge strong.

Cetoconcha: hinge teeth obsolete in the adult; pallial sinus obsolete; siphoseptum foraminate....."

Dermatomya tenuiconcha(Dall)1913. " Alaska peninsula to Coronado Islands, in deep water" (Dall).

Collecting data: Dredged off Redondo Beach in 60 fathoms, apparently confined to the north side of the submarine canyon and to rocky bottom, not uncommon in the Pleistocene of Timm's Pt., San Pedro (Burch); Catalina Island, 30 fms. (G. Willett); Monterey, Calif. records- 66-73 fathoms, in green mud and rocks, off Point Pinos (U.S.F.C. Sta. 4552); 659 fathoms, in green mud off Point Sur (U.S.F.C. Sta.. 5699) rare (Allyn Smith)

Dermatomya trosti(Strong and Hertlein) 1937. Proc. Calif. Acad. of Sci., ser. 4 vol. 22, no.6, p. 163, pl. 34, figs. 3-6). Type locality: Costes Bank, off San Clemente Island. And a note from Dr. A. Myra Keen " We have a specimen that I believe to be of this species, from off San Diego."

Dermatomya buttoni(Dall)1916. " Monterey, Calif. (Button)" (Dall).

Monterey records: 581 fathoms, in mud (U.S.F.C. Sta. 3670): rare.(Smith).

Dermatomya beringiana (Dall),1916. " Aleutian Islands to Tillamook,Ore."(Dall

Dermatomya leonina (Dall),1916. " Off coast of Washington,877 fathoms" (Dall

Genus Cetoconcha Dall,1889. Type: Lyonsia bulla Dall.

" Shell differing from Poromya proper by the cartilage being almost external and the fossettes diminished in size and upturned, the external ligament consequently nearly obsolete; the dentition obsolete except the cardinal tooth of the right valve, which itself is sometimes absent in the adult, though observable in the young; other shell characters much as in Poromya" (Dall).

Cetoconcha malespinae Dall,1916. " Southwest of Sitka, Alaska, 1,579 ftms. ((Dall). Known only from the type locality.

The only note received on this species is one from Dr. Joshua L. Baily Jr. who commented " Although Dall and Oldroyd both use malespinae, I believe this to be an obvious typographical error for malaspinae."

However, it is not likely to make a great deal of difference to most of us how they spell the name of such an exceedingly rare little species.

Family CUSPIDARIIDAE

" Shell small, ovate, posteriorly rostrate, inflated, thin, white or gray; umbones submedian or slightly anterior. The surface may be smooth or granulose, or concentrically or radially sculptures, and it is covered with a thin light brown periostracum. The ligament is internal, usually posterior, and is situated in a groove or fossette which may project from the dorsal margin or may be more or less adherent; a lithodesma is present. The hinge may be toothless or with cardinal and lateral teeth. There may be a posterior internal rib or buttress, variable, and more or less parallel with the dorsal margin. The interior is white, not pearly; the anterior muscle scar double or single, the posterior muscle scar double, a pallial sinus is absent." Dall, Bartsch, Rehder " Marine Molls. of Hawaii".

Genus Cuspidaria Nardo,1840. Type: Cuspidaria typus Nardo (-- Tellina cuspidata Olivi) (by original designation).

Subgenus Cuspidaria s.s.

" Valves smooth or concentrically feebly sculptured, fossette posteriorly inclined and attached to the hinge margin by its posterior edge; one posterior lateral tooth in the right valve." Dall,1903.

Cuspidaria glacialis G.O. Sars,1878. " Off San Diego, Calif., 239 fathoms. Also Atlantic. Johnson " Mollusca of Atlantic Coast" gives the range " Gulf of St. Lawrence to Florida, 64-1467 fath." Type locality: Vadso,Norway.

Cuspidaria subglacialis Dall,1913. " Off California coast in deep water"(Dall

Cuspidaria apodema Dall,1916. " Off Sitka, Alaska,and south to Panama Bay, in deep water" (Dall). Type locality: Sta. 2859, southwest of Sitka,Alaska.

Collecting data: Rather common in mud bottom 25 to 75 fathoms off Redondo Beach and in 50 fathoms off Ensenada, Mexico (Burch); Catalina Island, 50 fms. (G. Willett).

Cuspidaria chilensis Dall,1889. " Off Oregon in 277 fathoms, and south to coast of Chile in 1,036 fathoms" (Dall).

Cuspidaria nana Oldroyd,1918. Dall in Bulletin 112 listed this species and gave the range " Baulinas to Monterey,Calif." However, the following note from Dr. A. Myra Keen (personal comm. July 1944) places this species in another group and is interesting " Cuspidaria nana Oldroyd is a Sphenia. It is my opinion that Sphenia globula Dall,1919, is a synonym. We have type material of both for comparison." So we have Sphenia nana (Oldroyd) with S. globula Dall in synonymy.

Genus Cardiomya A. Adams,1864. Type (by monotypy), Neara gouldiana Hinds. " Valves with radiating sculpture, and the fossette more vertical and prominent; otherwise like Cuspidaria s.s." (Dall, 1903.

We have a note from Dr. A. Myra Keen in this connection as follows " Paleontologists such as Stewart,Vokes, and others , now recognize Cardiomya as a full genus; rightly, it seems to me."

Cardiomya pectinata (Carpenter),1864. " Puget Sound,British Columbia to Panama Bay" (Oldroyd). Type locality- Puget Sound.

Collecting data: Rather common in about 25 fathoms off Catalina Island and off Redondo Beach, Calif. also in the Pleistocene of Timm's Point,Hilltop Quarry etc. of San Pedro (Burch); San Pedro, [illegible] fathoms (G. Willett); Smith' Cove, Seattle Harbor, in 10 fathoms mud,1920 (.J. Eyerdam)

Cardiomya beringensis (Leche),1883. " Bering Sea to Kodiak Island and Panama Bay" (Dall).

Collecting data: Off Redondo Beach, Calif. in 75 fathoms mud bottom 8/38 (Burch); Craig and Ketchikan, Alaska in 25 fathoms (G. Willett); Sawmill Bay, Evans Island, Prince Wm. Sound, Alaska, 1922, dredged in 15 fathoms mud bottom (W.J. Eyerdam).

Cardiomya oldroydi (Dall),1924. In I.S. Oldroyd, 1924, Publ. Puget Sound Biol. Station, vol.4, p. 33, pl. 1, fig.13. " Vancouver Island, British Columbia to Puget Sound" (Oldroyd) to Catalina Island, Calif. (G. Willett).

Mr. George Willett of the Los Angeles Museum has dredged this species in 70 fathoms off Catalina Island which is an entention of range recorded here from Puget Sound southward to Catalina.

Cardiomya californica (Dall),1886. " Puget Sound to San Diego, Calif." (Dall). Type locality: Catalina Island, Calif.

Collecting data: Not uncommon in mud bottom 25 to 50 fathoms off Redondo Beach, Calif. (Burch); San Pedro, 20 fathoms, Timm's Point Pleistocene (G. Willett).

Cardiomya planetica(Dall)1908. " Pribiloff Islands, Bering Sea, to Coronado Islands, Lower Calif. in deep water" (Dall). Type locality, U.S.S. Albatross Station 2985, off San Diego, Calif.

Collecting data: Off Redondo Beach, Calif. in 50 to 75 fathoms mud bottom (Burch); Craig, Forrester Island, Alaska in 50 fathoms and off Catalina Islaand Calif. in 50-100 fathoms (G. Willett); Drier Bay, Knight Island, Prince Wm. Sound in 10 fathoms, 1923 (W.J. Eyerdam).

Cardiomya balboae (Dall),1916. " Cortez Bank, Calif. 60 fathoms" (Dall), to Catalina Island, 50 fathoms (G. Willett).

Collecting data: Mr. Willett of the Los Angeles Museum has dredged this species in 50 fathoms off Catalina Island, an extention of range recorded here. Before this it has been known only from the type locality.

Genus Myonera Dall and Smith,1886. Type: Neaera paucistriata Dall (by original designation).

" Surface with radiating or concentric sculpture or both; hinge edentulous; fossette vertical or posteriorly directed, adherent by either margin" (Dall, 1903).

Dall,Bartsch, and Rehder " Marine Mollusks of Hawaii" 1938 use Myonera as a subgenus of Cuspidaria. However, Myonera has a hinge without teeth, whereas Cuspidaria s.s. has a hinge with a right posterior lateral. This with other differences make quite a different hinge and seem to indicate a full generic distinction. The figures will show this.

Myonera tillamookensis Dall,1916. " Off Tillamook Bay, Oregon in 786 fathoms" (Dall).

Leiomya A. Adams,1864 was used as a genus by Dall in Bulletin 112 and followed by Oldroyd and others. Plectodon Carpenter,1864 was used as a subgenus under Leiomya. There has been no little confusion regarding these two names, used by many authors including Dall (1903) as separate subgenera of Cuspidaria. Dr. A. Myra Keen (Personal communication, July, 1944) gives an explanation as follows. We are accepting her conclusions .

" Leiomya A. Adams,1864: Ann. Mag. Nat. Hist. ,ser. 3, vol.8, p. 208. Genotype by monotypy: L. adunca (Gould). Original descriptionL "shell thin, ventricose, hyaline, beaked posteriorly. Hinge with an external cartilage-pit in each valve . Right valve with two anterior primary teeth; left valve with a single primary tooth. Lateral teeth two, strong, prominent." Dall,1886 says the cardinal of the right valve is single and bifid.

Reviewing all evidence some years ago, Dr. Schenck and I came to the conclusion that as all the evidence we had concerning the genotype of Leiomya is hear say and opinion, and as the type of Plectodon, proposed the same year and possibly prior to Leiomya, is a west coast species, it is more practical for our purposes to recognize Plectodon as a genus, pending a monographic study of the group by some specialist. The data on Plectodon are: Plectodon Carpenter,1864 (Suppl. Rept. Brit. Assoc., p. 638). Dall,1886 (Bull. Mus. Comp. Zool. Harvard, vol. 12, no.6, p. 299) says: " Plectodon .. is closely related to Leiomya. It differs in the insertion of the cartilage behind and under the beaks, instead of on the hinge-margin itself, or in a fossette; in having rather than a true tooth upon the margin, a tooth-like prominence formed by the spiral twisting under the beaks of the hinge-margin itself, upon and over which, in Plectodon scaber, there is a minute external ligament; lastly in Plectodon there is a granulated surface such as in Poromya. The pallial sinus appears to be about the same in both, and the tips of the siphons are protected, in both groups, as in Schizothaerus, by a leathery ring, flattened and broadened at the sides. Until recently only two right valves of Plectodon were known, but in 1873 I dredged at Catalina Island, Calif., in 16 ftms. .. mud, some half a dozen living specimens, which have enabled me to make a careful comparison with my Neaera granulata. There can be no doubt of their generic identity, and even considered as species they are very similar, the intwisting of the margin being less marked in granulata and the supposed external ligament obsolete. I regard Plectodon, therefore, as a mere section of Leiomya,which might also include Rhinoclama, which is of about equal value with Plectodon."

Rhinoclama " Dall and Smith" is described in the same paper (Dall,1886 p. 300) as like Plectodon but without cardinal teeth; Halonympha " Dall and Smith" (Dall,1886, p. 301) has an acute cardinal tooth in the right valve, no other teeth in either valve, a clavicular rib extending posteriorly in both valves.

The specimen of Plectodon illustrated in the Pelecypod Key was contributed by Mr. George Willett, who dredged it off Catalina Island in 40 fms. The shell figured by Mrs. Oldroyd (Marine Shells ... vol.1, pl. 54, fig.4) is Cardiomya planetica. One further word on generic allocation: Thiele makes Plectodon coordinate with Leiomya, both subgenera of Cuspidaria."

Plectodon scaber Carpenter,1864. " Catalina Island, Calif. to San Diego" (Dall) Type locality, Catalina Island in 40-60 fathoms.

Collecting data: Dredged off Catalina Island by Mr. George Willett in 30-60 fathoms.

Family VERTICORDIIDAE

" Shell of small to medium size, suborbicular to ovate, inflated, thin or moderately thick, whitish or gray, covered with a brownish periostracum, the umbones are submedian or anteriorly situated,often with a rather conspicuous depressed lunule. The surface is usually minutely granulose, the microscopic granules or obtuse spines being arranged in crowded radial rows; besides this thwre may be more or less conspicuous radial ribs. The hinge line is usually somewhat sinuous and is anteriorly thickened, or may have cardinal and lateral teeth. The interior is pearly and has two subequal muscle scars; the pallial sinus is either absent or only slightly developed." Dall, Bartsch, & Rehder 1938.

Genus Verticordia J. de C. Sowerby, 1844 (ex. Wood MS). Type (by monotypy) Verticordia cardiformis J. Sowerby.

Subgenus Trigonulina D'Orbigny,1846. The following note (personal commun. July,1944) by Dr. A. Myra Keen explains this point: " Trigonulina D'Orbigny in Sagra, Hist. Nat. Cuba (Moll.), vol.2,1846, p. 291, is described by Thiele as being compressed, radially ribbed, with a long hinge tooth. Verticordia s.s. is toothless. The type of Trigonulina is probably ornata, by monotypy; I have not seen the original reference.

Verticordia (Trigonulina) ornata(D'Orbigny),1846. " Catalina Island, Calif. to Panama Bay. Also Japan and the Antilles" (Dall,1921). Keen " Abridged Check List" gives lat. 8-36 which would take the range northward to Monterey, Calif. Johnson gives the range on the Atlantic " North Carolina to West Indies, 8-687 fathoms"

Collecting data: We have found this species rather a common dredged shell recording it off Santa Cruz Island in 50 fms., off El Segundo, Calif. in 40 fms., off Redondo Beach in abundance between 50 and 75 fathoms, off Rocky Point in 40 fms., off Ensenada, Mexico in 50 fms. (Burch); San Pedro 20 fms., Catalina Island 30 fms. (G. Willett).

Johnson in " Mollusca of Atlantic Coast" lists a subspecies, Verticordia ornata caelata Verrill 1884 with range " Off Martha's Vineyard, Mass. 100 fath." Dr. A. Myra Keen comments on this " As to Verticordia caelata Verrill 1882((not 1884), there is no evidence in the original description as to how it differs, if it does differ, from V. ornata."

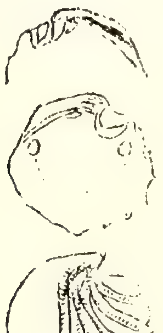
Genus Lyonsiella M. Sars,1872. Type: Lyonsiella abyssicola Sars.

" Shell small,thin; lunule faint or none; ossicle semicylindrical,forked behind; external ligament almost none; right valve edentulous, lunular edge a little produced and thickened; left valve with an elongate obscure thick-ening of the hinge-margin under the beak."

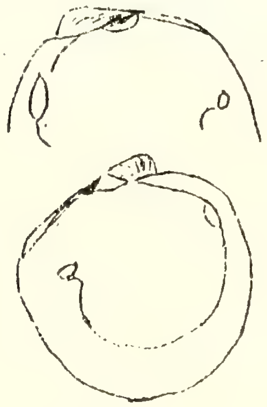
The generic allocation of Lyonsiella has been the source of a variety of quite different opinions. Dall in Bulletin 112 and followed by Mrs. Oldroyd and others placed it in a family Lyonsiellidae, but with a question mark. Johnson and a host of other authors have placed it as a genus of Lyondiidae. We are placing it here on the advice of Dr. A. Myra Keen (Per. Comm. July 1944) " Thiele (Handbuch der Systematischen Weichtierkunde, pt. 3), who was a care-ful student and an authority on thw soft parts of the Mollusca, places Lyonsiella in the Verticordiidae on the basis of anatomy. It even falls in a different superfamily, the Poromyacea, whereas Lyonsia is placed in the Pandor-acea. I should recommend following Thiele. If this meets opposition I should use the family name Lyonsiellidae.

The drawing of Lyonsiella alaskana in the Pelecypod Key is of the holotype"

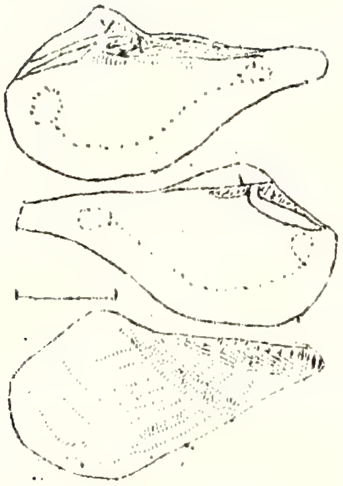
Lyonsiella alaskana Dall,1894. " Southwest of Sitka, 1,659 fathoms, and off Catalina Island, California in 600 fathoms" (Dall).



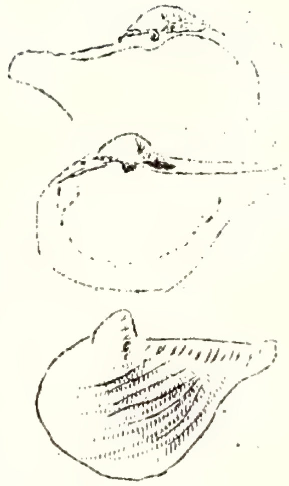
Verticordia



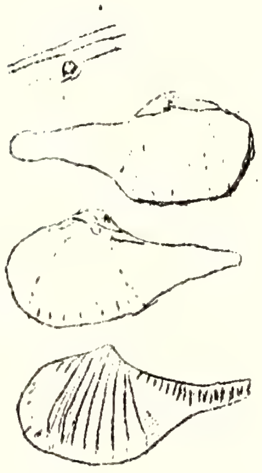
Lyonsiella



Plectodon



Cuspidaria



Cardiomya

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Asthenothaerus villosior Carpenter, 1864. We have the following personal note from Mr. Allyn Smith of the California Academy of Sciences " This has been confused for a long time with Thracia diegensis, which is a very different shell. The Academy has a half valve, taken by the Crocker-Beebe Expedition from somewhere off Mexico (I forget where now). This looks like a much elongated Thracia curta, with about the outline of a very young Platyodon cancellatus (although, of course, the similarity ends there). It is about 3/4 inch long. A. villosior is a perfectly good Mexican species that probably should not be listed in the California fauna."

We also have a note from Dr. A. Myra Keen of Stanford University " Re Asthenothaerus villosior vs. Thracia diegensis: All of the specimens I have examined have turned out to be the latter. I have, from the National Museum, photographs of the holotype of the former, used as a basis for the drawings in the Pelecypod Key. ...."

Our final conclusion on this problem is that all of our local shells labelled Asthenothaerus are, in reality, Thracia diegensis.

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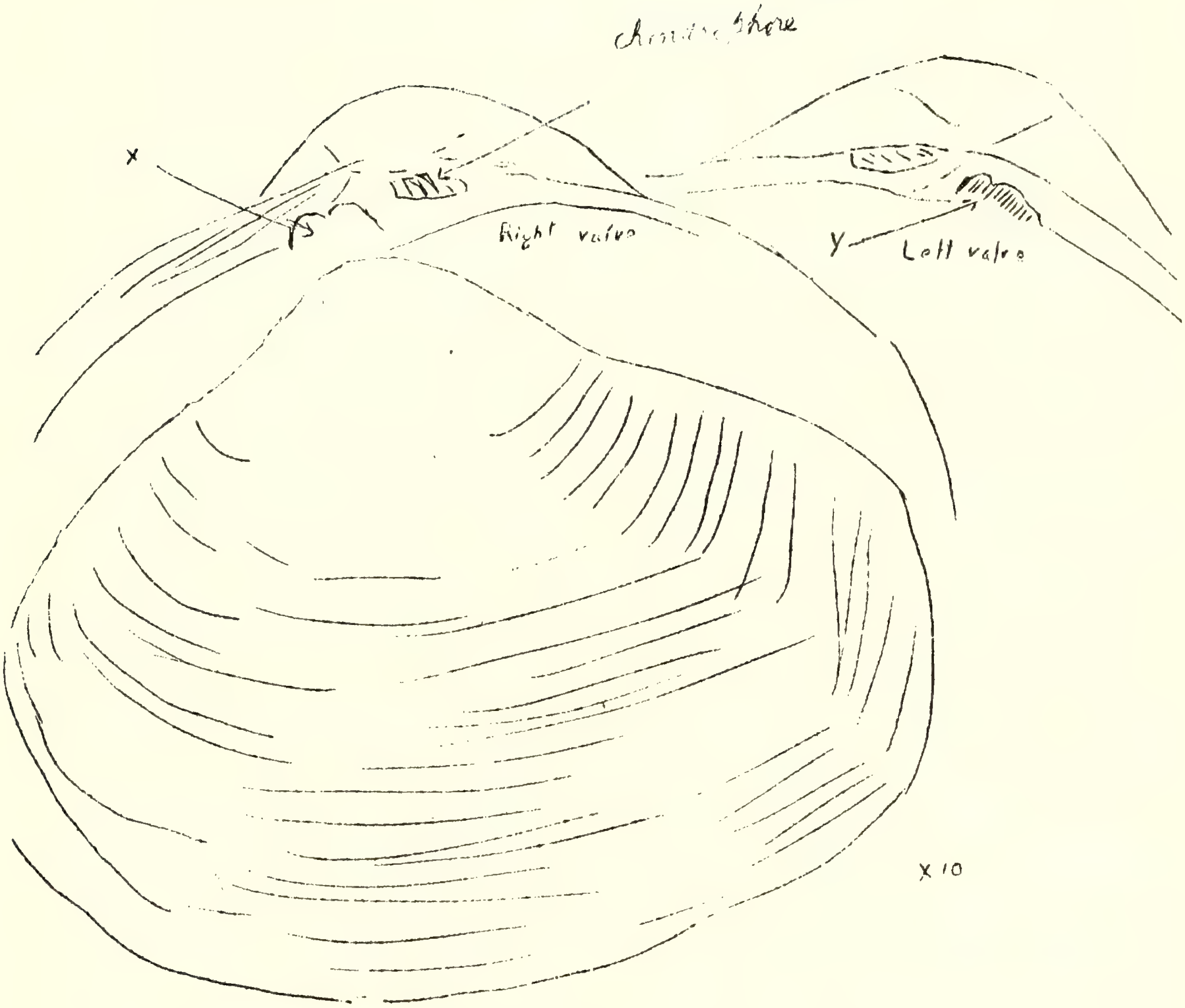
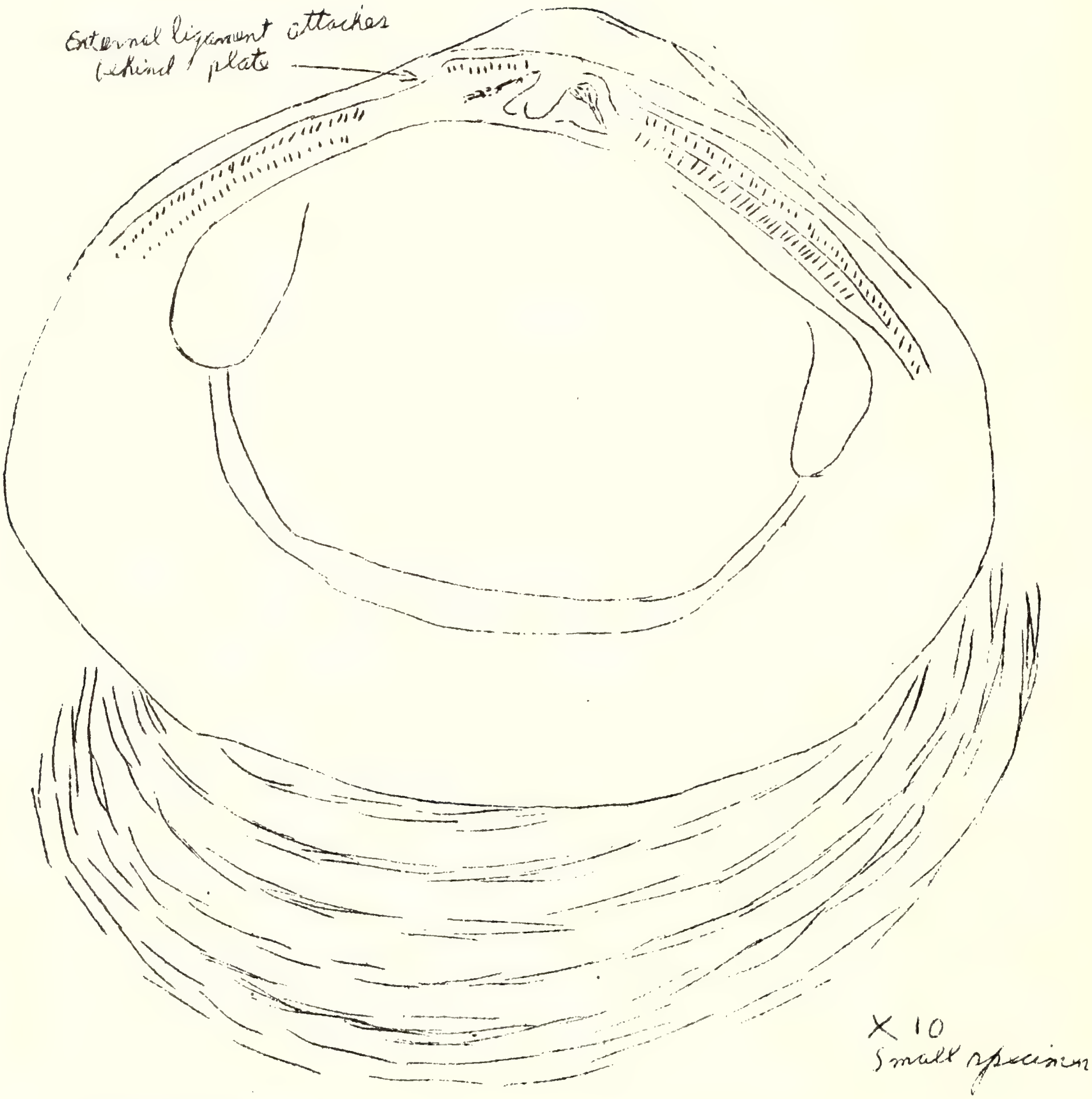
The following note has been received from Mr. Allyn Smith " Further note on Mytilus dunkeri (See Minutes, No. 36, bottom of p. 6). Your account leaves the impression that there was a large planting of Japanese oyster spat in Monterey Bay at Elkhorn Slough which contained M. dunkeri. The facts are that Paul Bonnot inspected the shipment of spat, found M. dunkeri and other Japanese species, and ordered the entire shipment destroyed , which was done. Thus dunkeri has not knowingly been introduced into Monterey Bay."



Dermatomya tenuiconcha (Dall)   Off Redondo Beach, Calif. 50 fathoms, , mud and gravel, north side of the canyon, 8/1940.

Note by Thomas A. Burch, who drew the above figure " Hinge consists of one large protuberate tooth (X) in the right valve only which fits into a depression (y) in the left valve. A chondrophore is present. Sculpture consists of growth lines only and there is a thin easily rubbed off periostracum which laps over inside the shell."

We are not positive of the specific identification of the above species. Our Redondo Beach specimens have never been compared with type material.



Family CORBICULIDAE

Genus Corbicula Megerle von Muhlfeld,1811. Ges. Nat. Fr. Berlin, Mag. vol. 5, pt.1, p.56. Type (by monotypy): Tellina fluminalis Muller.

Corbicula fluminea Muller This is an exotic species collected in August 1938 on the north bank of the Columbia River in Pacific County, Wash., 2 miles east of the little town of Knapton. This species was introduced supposedly with seed oysters from Japan. It is not known whether or not it has become definitely established.

We are uncertain about the specific identification of this species and hope to receive further information.

Minutes of the Long Beach Shell Club

The Long Beach Shell Club met in the Childrens Room of the Main Public Library, August 13,1944 at 2:30 P.M. Fourteen members present. Mr. Ralph Bormann, the president, presided.

Plans were made for the quarterly change in the shell collection in the Servicemen's Club. Those in charge of the club report that returning servicemen show great interest in this display, identifying the shells they have seen or brought home with them.

Mrs. Jean Wilkins, with a large number of specimens from the Agassiz Club collection, illustrated her excellent talk on Cerithiidae. She was particular to make definite many distinguishing marks in the numerous species. In the Cerithiidae there are thirteen genera and five hundred species. Of these the only ones found in Long Beach are the California Horn Shell and its varieties and several small Bittiums.

The club was given the opportunity to look over a large and varied collection of shells sent from the South Seas by a serviceman to be distributed among his former fellow employees of the public library.

Mr. E.W. Ulrich brought a number of choice specimens from his recently acquired collection for the members to inspectand enjoy.

Mr. E.P. Baker, has a front page article inthe recent issue of Shell Notes- a Florida publication- " A Brief Note on California Rock Dwellers".

The club appreciates the effort Mrs. E.P. Chace makes to be present at the meetings. Her presence is most helpfuland inspiring. Upon motion Mr. Bormann adjourned the meeting.

Grace Stillwell, Secretary.

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Concholepas concholepas (Bruguiere) syn. C. peruvianus Lamarck

by W.J. Eyerdam

This mollusk seems to be the counterpart of the genus Haliotis in the waters of Peru, Chile, and Patagonia where it lives in almost identical habitat and pursues the same habits of life. Neither Haliotis nor Concholepas is known from the Panamic province which extends from about Mazatlan, Mexico to Cape Santa Elena, Ecuador. There are nearly 100 species of Haliotis in the world, found in N.W. America, one small rare species in West Indian waters, Australia, Europe,Africa, and S.E. Asia, but not a single species in South America. Concholepas is known only by two species, one of which is rare in the Philippines. They cling to rocks the same as abalones and are prized as food in the same way. Large specimens are up to 4 inches and consist of only one whorl. I have a record size in my collection which is one that I ate in Valparaiso. It is 121mm. long or 4 3/4 inches- 95 mm. wide- inside depth is 50 mm- outside height is 55mm. and weight of shell is 11 ounces . It is covered with small barnacles making the outside completely unrecognizable.

The above interesting note on the habits of Concholepas by our member, Eyerdam is amazing to one who has never seen a living specimen because the genus Concholepas Lamarck 1801 is always placed in the family Thaisidae or Muricidae indicating that it is anatomically about as far removed from Haliotis as it is possible to be.

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McKenzie Gordon, Box 1694, Little Rock, Arkansas, c/o U.S.G.S. This was sent us by Allyn Smith. It is the first we have heard of Mac Gordon for years. Either Mac is the world's worst letter writer or he is sore at us for something.

Mr. C.R. Mahaffey, 276 30th St., San Francisco 14, Calif. has been building up a shell collection for the David High School, David, Chirigui, Panama.

Miss Adele Koto, 822 Park Ave., Beloit, Wisconsin. We were very happy to have a letter. Miss Koto is well and actively exchanging for new rare species.

Mr. Ralph E. Dury, Cincinnati Society of Natural History, Cincinnati, Ohio has sent by express a large box of fine shells to be distributed among the members at the coming meeting of the club. We are sincerely grateful to Mr. Dury for his generosity and it is to be expected that he will get further expressions of appreciation.

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California Fish and Game, Vol. 30, No.3, July 1944, has been received. This issue is devoted almost entirely to an exhaustive paper of over 100 pages on " The Fishery of the Lower Colorado River" by William A. Dill.

The only reference to mollusks is as follows " ... No clams or mussels were taken. Grinnel(1914) stated that " As far as known ** (i.e., to him)* in the Needles to Yuma section of the river valley there are no aquatic molluscs ***". However, in 1942 snails were fairly common along the shores of Lake Havasu and were also found in the river itself near Blythe, in Palo Verde Slough, and in Haughtelin Lake."

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Cpl. Frederick M. Bayer, 34401976, 317 A.A.F. Base Unit, Will Rogers Field, Oklahoma. Ted is moving around too rapidly to keep up with in one issue of these minutes. This is the latest address we have for him in August. He writes of having collected some interesting fresh water species in St. Louis, Ancylus etc.

Major H.S. Mort, 13 Milner St., Mossman, N.S.W., Australia. " In a previous number I was interested to read of " Turritella Terrace" and in that connection the following may be of interest: Keppel Bay is a large stretch of water on the Queensland coast, on the tropic of capricorn, and is the principal holiday resort of the inhabitants of Rockhampton which is on the Fitzroy River about 20 miles from the coast. The bay is about 30 miles in length and consists of a series of gently shelving beaches, broken by headlands and several small creeks. About 10 miles from the shore are several islands of which the largest are Great Keppel Island and North Keppel Island; these have a large area of dead coral on the ocean side, but long beaches on the westward side and are good collecting grounds for both continental and reef fauna. On the mainland, at intervals along the beaches, one comes across patches of small shells in extensive deposits, but owing to the large tide range these migrate from time to time along the beaches-- I located one patch about 30 yards long which stayed in one place for three days and then dissapeared; it was found next day about a quarter of a mile along the beach. The shells are about 95% Turritellas about 3/4 inch to one inch long and going about 700 to the cubic inch. A peculiar feature is that there is practically no sand with the shells. I measured one deposit about 50 yards by 10 ft. and 3 ft. deep before striking any sand, which I think means about 45 million Turritellas for this one patch alone. I have found these deppsits over a range of about 20 miles and sometimes there would be ten deposits to a mile so the total number would be enormous. The tide range is about 10 ft. and the shore shelves so gradually that in some places the tide runs out a mile. The interesting part is that we have two places on opposite sides of the Pacific and on each side of the equator with large deposits of shells of the same genus- California and Queensland. "

We regret sincerely to note that the letter from which the above was taken had to be written from the hospital.

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Dr. Jeanne S. Schwengel, 260 Mamaroneck Road, Scarsdale, N.Y. " ... and believe it or not, I am a Native Daughter, having been born and brought up in Stockton." And the following sounds even more like a product of our great state " Four days a week I work at Red Cross Headquarters from nine to five or later, and the other two days I spend in Philadelphia at ANSP."

Allyn Smith recently sent in a clipping from The New York Times, May 23, 1938. The article follows: " Snail Feeds on Rubber- Giant Pest Ravages Plan-tations in Malay Peninsula- Singapore (AP)- A giant snail of unknown origin which thrives on a diet of raw rubber, has become a nightmare to rubber plan-ters throughout the Malay Peninsula. This snail, which varies from 8 to 10 inches in length, is a particular menace to young rubber trees being put in now all over the peninsula to replace the worn out stock planted in the early days of rubber cultivation. The giant pest also nibbles the tender bark from older trees which have been tapped, and drinks the raw rubber, on which it thrives with almost maggot-like rapidity. A novel snail poison has been devised to combat the menace. It is a compound of bran mixed with ' canned heat'. The snail likes this diet so well he dies of over-eating."

If any of the members know the name of the snail referred to, we will be glad to have it.

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The Gastropod

By George T. Bush (1900)

There was a little gastropod
Sat on a blade of grass,
His ancestors sat there before
To watch the ages pass.

The Cambrian era came and went,
The monkey dropped his tail,
The archaeopteryx shed his teeth,
But the snail remained a snail.

The eohippus changed his shape
Till he became a horse,
But still pursued the gastropod
His gastropodous course.

Now,all content, he sits and thinks,
And sometimes only sits,
He'll be a snail when cosmos
Falls crumbling into bits.

So do not be a gastropod
And crawl the ages through
While other creatures of the earth
All the evolving do.

But try to heed the cosmic urge,
Take lessons from the past
And,not content to be a fish,
You'll be a man at last.

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Abby H.C. Gorham,1323 East Third St., Long Beach 4, Calif. Change of address.

Morris K. Jacobson,Schroon River Camps,Warrensburg, N.Y. " Well, as you might have seen from the newspapers, after being accepted for the service, the army authorities decided because of my age not to induct me after all. I suppose I should feel relieved, but the truth is that I feel a distinct let-down. But everyone tells me I'm lucky so I suppose they're right. We are up here in War-ren County for the summer and I devote a good deal of my time collecting the rather sparse mollusks of this granitic region. I find all the usual land and f.w. species, but since I am collecting some (i.e. Haplotrema concava & Elliptio complanatus) for the first time I do experience quite a thrill. The whole business about the ' written record' is absurd, you're turning out an informative,scientific,and highly entertaining publication. Why in blazes should anyone raise objections? Keep it up."

C.L. Blakeslee,Pittsford, N.Y. " ... Dont take too seriously the critics. We always have to have opposition and sometimes it is of value in stimulation. However, you do not need that and your paper is fine and interesting. Some day, not too far away, I'm going to pack up my Eastern shells and with them drift out your way. Save a chair in the circle for me." We will consider that Mr. Blakeslee is already a member of our circle.

Alden Strong, 863 Watertown St.,West Newton, Mass. We are happy to welcome Mr. Strong to our shell circle. He is interested in the exchange or purchase of the rarer species.

Miss Ruth Eaton, 326 W. 5th St.,Long Beach 2, Calif. " I'm mailing a few Murex gemma that may help the man who needed some." The shells have been received and forwarded.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
September 1944

The minutes and other publications of the Conchological Club os Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

Any institution or library interested in filing these minutes is welcome to all available back issues and a place on our mailing list without charge. Students of particular problems are always welcome to ask us for specimens for study as well as all information we may have.

The next meeting will be held October 1, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M.
We are now meeting the first sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips, localities etc. to your editor,

John Q. Burch,
4206 Halldale Ave.,
Los Angeles 37, Calif.

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Mr. David Nichol, Box 2466, Stanford University, Calif. " Considerable progress has been made toward a classification of the Glycymeridae since the last letter I wrote to you, and I now have all the material I need except for one group, the genus Melaxinaea Iredale.

Perhaps you may have the genotype or one of the following related species which Iredale places in the genus:
Melaxinaea labyrintha Iredale,1930 (genotype).
Melaxinaea litoralis Iredale,1931.
Pectunculus nova-guineensis Angas,1879 = Pectunculus angasi Crosse,1880.
Pectunculus vitreus Lamarck,1819.

From what information I have been able to obtain the species of this genus are found in the waters of Queensland and New Guinea.

If you have any of the species listed above, I would like to borrow them for study."

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If any of the members have correspondents in the Hawiian Islands and should wish to try sending them a box of shells at this time it is suggested that you consult your post office before packing the box. There is a limit on both the size of the box and the weight. Only one package in a certain period may be mailed. We acquired the above information the hard way today when we appeared at the Los Angeles post office with a generous box consigned to a friend in Honolulu.

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Miss Verna Mann, 430 N. Parish Place, Burbank, Calif. Miss Mann sends her regrets at being unable to get to recent meetings. The above is her new address.

Wight Keyes II, Gunning Pt. Rd., Falmouth, Mass. " I live in Falmouth,Cape Cod, and have access to all the shells on the coast. I will be glad to send you the species of Urosalpinx,Nassa,Fulgur,Polinices,Littorina,Mactra, Modiolaria etc. found here for species from the California coast."

Mr. Allyn G. Smith, 722 Santa Barbara Road, Berkeley 7, Calif. " Am trying to fill a series of the Conchologist's Exchange (predecessor to the Nautilus), so if you hear of any copies, grab them for me or let me know. I also need Vol.3,no.2 of the Nautilus to complete my set and the same thing applies.

Mr. Allyn G. Smith has reviewed the following new papers published by the California Academy of Sciences that are of interest to conchologists:
" Notes on some Unfigured Type-Specimens of Chinese Mollusks from the North Pacific Expedition", by Teng-Chien Yen. Proc. C.A.S. 4th series, 23(38): 561-586, pls. 50-51. August 22,1944.

Describes and figures marine and a few land and freshwater mollusks collected principally by the Expedition zoologist, William Stimpson, from June 1853 to October 1855 (U.S.S. Vincennes, Captains Ringgold and Rodgers). The molluscan collection of this expedition was studied by A.A. Gould, and his results were published successively in the Proceedings of the Boston Society of Natural History from 1859 to 1861, and reproduced in 1862 as the third part of his Otia Conchologica. The material on which this paper is based is now located in the Smithsonian Institution in Washington,in Gould's own collection in the New York State Museum in Albany. Many species now figured belong to familiar west coast genera such as , Bittium, Calliostoma, Ethalia, Cyclostrema, Liotia, Alvania, Cerithiopsis, Anachis, Cylichna etc. The figures are in general quite good.

" Sublittoral Marine Algae of the Monterey Peninsula", by Gilbert M. Smith, Professor of Biology (Botany), Stanford University- Proc. C.A.S., 4th series 25(4): 171-176. June 1,1944.

This paper is No. 4 of the Alice Eastwood Semi-Centenniel Publications of the Academy. It lists 68 species in depths from 15 to 60 feet, taken with a dredge.

Mr. Allyn Smith also sent the following note pursuant to the brief in Minutes No. 35, p. 15. " Note on Calhoun's article " The Bottom Fauna of Blue Lake, Calif." Although the author states he did not find any mollusks in this lake, he should have found the common fresh water clam that I have been calling Sphaerium raymondi Cooper, which is common in the lakes of the higher Sierra Nevada and is eaten by trout, although I am not certain how important it is as a constituent of a trout's menu. There is a misunderstanding on the mollusks of " Blue Lake" that has been caused by confusion with the Blue Lakes in Lake Co. Information on mollusca was furnished the author of the article on the assumption he was discussing the Lake County Blue Lake, in which Carinifex newberryi minor and Physa costata are to be looked for. Dr. Hanna has collected them there.

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GIANT SNAIL OF MALAYA by Dr. W.J. Clench

Regarding the giant snail mentioned on page 20 in these minutes for August-September.

This snail is Achatina fulica Ferussac. It appeared in Malaya about 1910 at Singapore and has since spread over considerable territory in the lower Malayan peninsula. In size, it seldom exceeds 6 inches in length.

It appeared first in the Singapore Botanic Garden which would indicate an introduction on imported plants. Its original home is central East Africa but has been introduced into Mauritius, Seychelles, India, Ceylon, and Hawaii. In Hawaii, however, it has been successfullt killed out. Most of the Hawaiian introductions believed to have been made by the Japanese as a source of food. .

A very complete history regarding its occurance and its economic importance in Malaya has been published by F.W. South.

The Giant Snail (Achatina fulica Fer.) in Malaya. The Malayan Agricultural Journal, Vol. 14, no.7, pp. 231-241,1926.

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Harold W. Harry, Ph. M. 2/c , U.S.S. Algol. Home address Rt.2, Box 222, Shreveport, La. Harry's ship has been in port the past few days and we had a fine conchological session when he and Dr. W.O. Gregg dropped in for a visit a few evenings back.

Pecten Osbeck and the Marine Mollusca of Ascension Island, Atlantic.

by J.R. le B. Tomlin

The following personal communication, August 5,1944 settles one of our recent problems:

" Dear Mr. Burch; I have meant to write to you before about the validity of the name *Pecten* in Osbeck's book but war work keeps one away frôm conchology. Normally I am on the British Museum staff in London, but of course the museum is closed and has suffered some damage.

I can, however, state certain points as to the above.

1. Osbeck's work was published in 1757 and is therefore prelinnean and invalid.
2. Grant bases his claim on the German translation of 1765 and the English one of 1771. But opinions 21 and 57 of the International Commission expressly refuse validity to prelinnean names which have merely been cited post 1758, as *Pecten* is from Osbeck in these translations. The case which is always quoted as an example of this is that of Klein's numerous genera, which were repeated en masse by Bruguiere in 1792, but are not thereby validated.

Analagously, some one or others translation of Osbeck- which is merely a verbatim repetition- doesnt validate his names.

And now another point.

Many years ago I got into touch with one of the nurses at the Ascension Island hospital, and during her long stay there she collected shells and sent them home to us.

The fauna is very small: I am enclosing a list, which you may like to have of the 20 species which represent the total fauna that my friend collected in a good many years assiduous collecting. I do not feel at all sure that these 20 kinds are all indigenous there. They represent several different faunal areas- S. Africa, the W. Indies, the Atlantic Islands. There is a current which brings Carribbean shells to the west coast of Africa, and several well known Caribbean species are established there. *Fissuridea parviforata* is exclusively Cape G. Hope and has probably been brought to Ascension and St. Helena on the giant kelp. Several species are chiefly Mediterranean--e.g. *C. spurca*, *C. lurida*, and *Fiss. nubecula*.

There is a current westwards from Africa called the Benguela current , which carries material to the islands Ascension and St. Helena.

I don't think that there will be any additions to the list I give you.

There have been various spurious things brought to both these islands from the East, as they have both in their time been regular ports of call before the opening of the Suez Canal. A wary eye therefore has to be cast on any shell which purports to have been definitely collected on either of these islands.

Finally I must put you on your guard about another snag which has come up again at the British Museum. This is the existence of another Ascension Island in the Pacific. This isle is now more often referred to as Ponape in the Caroline group, but older writers used to call it Ascension- e.g. the Sowerbys- and at first I used to be puzzled at the British Museum by obviously tropical shells labelled " Ascension Island", which could not possibly have come from the Atlantic.

It is a pity that Grant and Gale have resuscitated the old Osbeck idea, which is quite untenable.

Have just received another of your interesting minutes. They are a great asset. Yours with cordial greetings, "

Marine Mollusca of Ascension Island, Atlantic.

c-- common

Bursa pustulosa (Reeve)
Cassis testiculus L. ------- c
Cymatium cyanocephalus (Lam.)
Cypraea lurida L. ------- c
(con.)

Cypraea spurca L. --------- c
Fissurella nubecula L.
Fissuridea parviforata (Sowerby)
Harpa rosea Lam.
Nerita ascensionis Gmelin
Pisania pusio (L.)
Pyrene cribraria (Lam.)
Strombus bubonius Lam.
Thais ascensionis (Gmelin)
Thais fasciatus (Reeve)
Thais deltoidea (Lam.)

Arca bouvieri Fischer
Hemicardium medium (L.)
Ostrea cucullata Born
Pecten nodosus L.
Spondylus powelli Smith

* * *

Additions and Corrections

Mr. Allyn Smith sent in some collecting localities and notes which are added here in the interests of completeness.

Minutes No. 33

Nucula cardara Dall (p.7)- Monterey records should read : 43-108 fathoms off Pt. Pinos and Santa Cruz.

Nucula carlottensis Dall (p.7)- Ditto: 581 fms. off mouth of Salinas R.

Acila castrensis Hinds (p.8)- Add: 15-149 fms. in Monterey Bay, in mud, sand and clay; common.

Nuculana taphria Dall (p. 11)- Add: 8-51 fms. in Monterey Bay, in sand.

Yoldia scissurata Dall (p. 12) - The Monterey record, through error, is the one that should have been cited for Nuculana taphria. The actual record should read : 35-139 fms., Monterey Bay, in mud.

Yoldia montereyensis Dall (p. 13)- For 152-871 fms. , read 152-1041 fms. I question the Lowe and Oldroyd records from 25 and 60 fms. .. as this is an abyssal species.

Cyrilla munita Carpenter (p. 13)- Add: 50 fms. off San Diego (F.W. Kelsey)

Minutes No. 34-

Glycymeris subobsoleta Carpenter (p. 4): Add: 5-15 fms., Monterey Bay, in coarse granitic sand.

Arca reeveana d' Orbigny (p.7) : Laguna Beach, 1 valve (AGS).

Minutes No. 35.

Pecten arces Dall (p. 14)- Another record: 764-891 fms. off Santa Cruz Id., in mud (USFC Sta. 4428); 1 specimen.

Pecten randolphi tillamookensis Arnold (p. 14a) - Another record: 659 fms. off Pt. Sur, in green mud (USFC Sta. 5699); 1 specimen.

Pecten vancouverensis Whiteaves (p. 14a)- Add: 15-200 fms. , Monterey Bay on calcareous algae; not uncommon.

Minutes No. 36

Anomia peruviana d' Orbigny (p. 3)- Add: Monterey (Hemphill) CAS coll. Loc. No. 6039 HH. These seem to be O.K. There are several specimens in the lot.

Mytilus dunkeri Reeve (p. 6)- Shall have more to say on this problem shortly based on a number of samples from various places loaned by Walter Eyerdam just received.

Volsella pallidula Dall (p. 14)- Add: 41-142 fms. Monterey Bay, in mud; fairly common.

Volsella diegensis Dall (p. 15)- Add: Rock fill at Elkhorn Slough, Monterey Bay; 12 fms. off Del Monte, on shale. Also, Sausalito and 2 mi. N. of Jenner, Mendocino Co. (AGS).

Minutes #37
Botula falcata Gould (p. 6)- We record it from 15 fms. off Monterey.
Botula californiensis Philippi (p. 6) - Monterey Bay in 8-15 fms., boring in shale. I have it also from the Mendocino Coast (3 mi. N. of Gualala); Cliff House Beach, San Francisco (W. Williams); Duxbury Reef (AGS).
Crenella decussata Montagu (p. 9)- Add: Monterey Bay, 15-30 fms. in sand.
Thracia trapezoides Conrad (p. 13)- Add: Monterey Bay, 35 fms. off Seaside, in mud; a single young specimen (Gordon).
Asthenothaerus villosior Carpenter- Minor comment: The CAS valve from Lower California has an outline like the figure in Dr. Keen's Key. If anything, it may be a slight bit more elongated than her figure.
Minutes No. 38-
Pandora punctata Conrad (p. 3) - Add: Monterey Bay, 10-15 fms. in sand; San Francisco Bay, 2-3 fms. in mud.
Dermatomya buttoni Dall (p. 11)- Locality of USFC Sta. 3670 is " Off mouth of Salinas River".
Cuspidaria apodema Dall (p. 12) - Monterey records: 70 fms. mud (McGinitie); 85-158 fms., soft, green mud, off Point Pinos (USFC Sta. 4475). 35f Catalina I.
Cardiomya pectinata (Carpenter) (p. 13)- Monterey record: 66-69 fms., green mud and rocks, off Pt. Pinos (USFC Sta. 4555).
Cardiomya californica Dall (p. 13) - Monterey record: 34-75 fms. mud and rocks off Pt. Pinos (USFC Stas. 4457,4474,4552). 50 fms. Catalina id. (H. Lowe)
Cardiomya planetica Dall (p. 13)- Monterey record: 40-202 fms. soft green mud and sand (USFC Stas. 4475, 4482,4483,4485). 35 fms. Catalina (H. Lowe
Verticordia ornata d'Orbigny (p. 15)- Monterey record: 25 fms. , sand, in Monterey and Carmel Bays; rare. Catalina Id., 50 fms. (H. Lowe).
Verticordia ornata caelata Verrill (p. 15)- Note by Hertlein: " Has 11 ribs and a wide posterior area".

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Family ASTARTIDAE
Genus Astarte Sowerby,1816. Type (by subsequent designation, Stoliczka,1871) Astarte lurida Sowerby, fide Grant and Gale 1931. Type as given in Oldroyd Vol. I. 1924, Dall in Proc. USNM 26, 1903 - Astarte sulcata (Da Costa).

" Shell equivalve, inequilateral, sub-ovate, or orbicular, or sub-trigonal, generally sub-compressed; concentrically wrinkled, covered with a thick epidermis, closed. Muscular impressions two, large, rather kidney-shaped. Impression of the mantle entire. Hinge tridentate in each valve. Ligament external, with dorsal area and lunule excavated."(Reeve).

In the preliminary discussion of this group the following note was made by John Q. Burch: " I have been using the sections of Astarte following Dr. Dall in " Synopsis of the Fam. Astartidae.." USNM, Vol. 26-,pp 933-951, Trans. Wagner Free Ist. 1903, pp. 1485-1496 etc. However, a casual study of the specimens in our collection tends to be a bit discouraging. I wonder if these sections are deserving of descriptions as subgenera. Dr. Dall stated ,1903, " The distinctions upon which the subordinate groups of Astartidae are founded are chiefly the greater or less development of the hinge teeth and modifications of external sculpture. As the type of the hinge formula does not change but merely submits to certain deductions from its possible total, it will be inferred that the subgenera or sections are not very widely separated." " Anyway some one will have to show me some easy way to place for example Astarte willetti and Astarte alaskensis in different subgenera. My off hand personal opinion is that we are splitting hairs when we try to subdivide the genus Astarte."

Dr . Joshua L. Baily Jr. noted in pencil following the above " O.K. and Amen" which seems to be the consensus of opinion. Therefore we will ignore the sections of Astatte. Those interested may examine the above references.

Astarte polaris Dall, 1903. " Aleutian and Shumagin Islands, Alaska. Circumboreal." (Dall). Johnson " Moll. of Atlantic Coast" gives " Davis Strait 90 fathoms". Type locality: near Shumagin Islands, Alaska.

Astarte compacta Carpenter,1864. " Forrester Island, Alaska to Puget Sound" (Dall). Type locality, Puget Sound.

Collecting data: Forrester Island, Alaska, 40 fms. (G. Willett); Ketchikan, Alaska and San Juan Islands, Wash. (W.J. Eyerdam).

Astarte willetti Dall,1917. " Forrester Island to Puget Sound" (Dall). (Report from Puget Sound by Oldroyds, Nautilus, vol. 39, p. 97.) Type locality, Forrester Island, Alaska.

Collecting data: Forrester Island,Alaska ,50 fms. (G. Willett)

Astarte rollandi Bernardi,1858. " Pribilof and Aleutian Islands to Prince William Sound, Alaska. Also Kamchatka." (Dall). Type locality, not known.

Collecting data: Cook Inlet, Umnak Island, Alaska- shallow (G.Willett) Seldovia, Alaska,1922, Akutan Island, Aleutians,1931 (I. Norberg, Eyerdam), Orca; Prince William Sound, Alaska (Norberg- Eyerdam Coll.).

Astarte rollandi loxia Dall,1902. " Semidi Islands, Alaska" (Dall). Keen " Abridged Check List" gives lat. 56-59. Type loc., Simidi Islands.

Collecting data: Orca, Prince Wm. Sound coll. by I. Norberg (Eyerdam)

Astarte arctica Gray, 1824. " Circumboreal. Arctic and Bering Seas and the Aleutian Islands." (Dall). Johnson " Moll. of Atl. Coast" gives " Greenland and Davis Strait, 15-60 fathoms." Type loc., [illegible] Bering Sea.

" Generally larger and not to elongate as A. borealis". (Grant & Gale)

Collecting data: Hinchinbrook Island, Prince Wm. Sound, 15 fms. coll. by I. Norberg, 1936; Izhut Bay, Afognak Island, 10 fms. (W.J. Eyerdam 1922) (Eastward extention from Aleutian Islands of about 1000 miles).

Astarte borealis Schumacher,1817. " Polar and Bering Seas, North Japan, and eastward to Prince William Sound, Alaska." (Dall). Johnson " Moll. of Atl. Coast" gives " Greenland to Massachusetts Bay, 15-100 fathoms".

" Alaskan specimens of this species are somewhat elongate, with the concentric undulations pronounced on the upper (umbonal) quarter or half of the valves, but smooth or with growth lines only on the remainder." (Grant & Gale, 1931).

Collecting data: Hanasloi, Iceland, coll. by Diomedes Davidson,1929, Ice Fjord, Spitzbergen, 10 fms. clay 1864, Drier Bay, Knight Island, Pr. Wm Sound coll. by W.J. Eyerdam, 1923, 10 fms., off Provincetown, Rhode Id., 19 fms. (W.J. Eyerdam).

Astarte alaskensis Dall,1903. " Southern Bering Sea, to Aleutians and south to Puget Sound. Herschell Island, Arctic Coast" (Dall). Type locality: Unimak Id., southern part of Bering Sea.

" This handsome species has prominent concentric ripples. Mr. George Willett obtained many specimens in the open sea off Forrester Island, Alaska and also in the straits. A. willetti Dall (Nautilus, vol. 31, p. 10, 1917) is smaller, relatively more ventricose and has fine concentric riblets. Mr. Willett who has done considerable collecting in the Alaskan waters, obtained the latter species in the open sea off Forrester Island, but not in the straits." (Grant and Gale, 1931.)

Collecting data: Ketchikan,Craig, Forrester Island,Alaska 10-40 fms. (G. Willett); Izhut Bay, Afognak Id., coll. by W.J. Eyerdam, 1922, 10 fms. Drier Bay, Knight Island, Prince Wm. Sound, coll. by W.J. Eyerdam, 1923, 15 fms., Hinchinbrook Id., Prince Wm. Sound, coll. by I. Norberg, 1936, 15 fms. San Juan Islands collected by W.J. Eyerdam.

Astarte fabula Reeve ,1855. " Circumboreal, Arctic Sea and south in Bering Sea, Nunivak Island" (Dall). Johnson " Moll. Atl. Coast" gives " Greenland 12-90 fathoms."

Astarte bennettii Dall,1903. " Polar Sea at Bennett Island, and south in Bering Sea to Nunivak Island." (Dall).

Astarte vernicosa Dall, 19[illegible]. " Arctic and Bering Seas. Attu to Atka Ids. in the Aleutian chain." (Dall).

rCollecting data: Atka Island, Alaska (U.S.N.M. in G. Willett coll.)

Astarte globosa Moller,1842. " Arctic Coast to Greenland" (Dall).

Astarte esquimalti Baird,1863. " Aleutian Islands to Puget Sound" (Dall). Type locality: Esquimalt Harbor, Vancouver Id.,British Columbia.

Collecting data: Ketchikan, Alaska 10-40 fms., Craig,Alaska 20-40 fma. (G. Willett); Drier Bay, Knight Id., Pr. Wm. Sound, Alaska 1923 (Eyerdam). .

Genus Bernardina Dall, 1910. Type: Bernardina bakeri Dall, 1910.

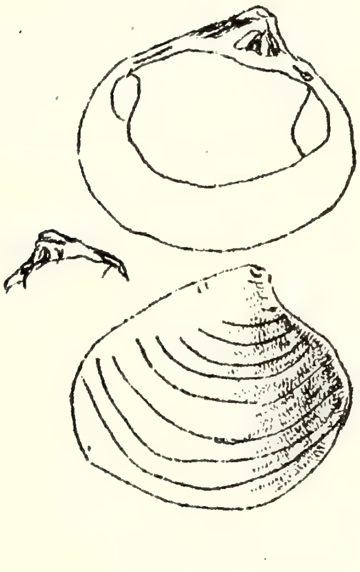
" Shell small, of the general form of Rochefortia, concentrically sculptured externally, with a conspicuous prodissoconch, which is elevated in the center and at the margins and between these points somewhat excavated; pallial line entire; hinge with the posterior dorsal margin of the right valve fitting into a shallow groover in the margin of the opposite valve; anteriorly with a strong left lateral fitting between two prominent flexuous right anterior laterals; two right and three left cardinals with the resilium posterior to them all. (Dall).

Bernardina bakeri Dall,1910. Point Loma, San Diego (Emerson) to Magdalena Bay, Lower California (Dr. Baker). Type locality: Coronado Islands.

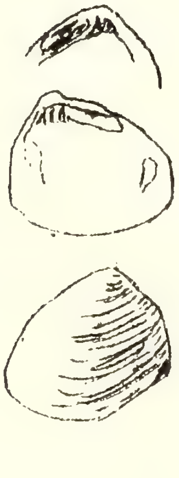
We ran a short note on the extention of range of this species in Minutes #35, p. 19, May, 1944, when our member William K. Emerson reported taking 4 complete specimens and 1 odd valve from the sand at the end of Point Loma. This seemed to be a slight northward extention of the range. Keen " Abridged Check List" simply gives lat. 32. However, we have sets from Dr. Fred Baker from as far south as Magdalena Bay, Lower Calif., Mexico and it seems probable that the range may be further extended.

Dr. Fred Baker was very proud of this little species and often made the remark that in his long life of collecting he had taken many new species but that Bernardina was his only new genus.

In concluding the family Astartidae perhaps it should be mentioned that the literature contains a number of species not only now in synonymy but several that have proved to belong to other groups such as Astarte crassidens Broderip and Sowerby (Carpenter Report, p. 175) which was figured and discussed by Dall , USNM Proc. 1903 , p. 949 as Venericardia crassidens.



Astarte



Bernardina

Family CRASSATELLIDAE

This family presents another dispute in Crassatella Lamarck,1799 vs. Crassatellites Krueger,1823. The authors supporting Crassatellites state that the sole species of Lamarck's Crassatella was a Mactra and cannot therefore be used. Grant and Gale, 1931,Dr. Joshua L. Baily Jr. in " West Coast Shells" and many others are of this opinion. This contention is well stated by Dr. Joshua L. Baily Jr. (Per. Comm. Aug. 1944) as follows : " Stewart prefers the name Crassatella to Crassatellites. The former name is uncertain because the type species was originally described as a Mactra. If this shell really is a Mactra, the name Crassatella cannot be used for our C. fluctuatus. But if it were not a real Mactra but only supposed to be one, the Crassatella is good. Neither Stewart nor Grant have seen Lamarck's original material and they have based their opinions on illustrations. Unfortunately they did not use the same illustrations, which accounts for the difference of opinion. In this case I agree with Grant, because the name Crassatellites has only one meaning, and there is no possibility of a misunderstanding when it is used. "

But we are disposed for the time being to follow the advice of Dr. A. Myra Keen stated as follows (Per. Comm. Aug. 1944) : " I have recently seen a copy of Krueger's work and am convinced it must be rejected as not binomial. Therefore, Crassatellites must be dropped. Kruger attaches the suffix- ites to all previously described genera as a device for indicating fossil species. He does not cite bibliographic references, and the use of his names must be attended with so much guess work and inference that it is much preferable to disregard them. An excellent discussion of the problem is given by Stewart (Acad. Nat. Sci. Philadelphia, Spec. Publ. no. 3, pp. 134-136,1930). There seems to be ample justification for returning to the name Crassatella Lamarck,1801-- C. tumida Lamarck,1807 -- Venus ponderosa Gmelin. This is Stewart's interpretation of the type, although Lamarck's actual citation was " Mactra cygnea, Chemn. 6, t.21, f. 207." As Stewart says " It is clear from the original description that the figure cited by Lamarck was due to a misidentification."

This family bears a close relationship to the Astartidae. " The chief characteristic by which the two families are discriminated is found in the ligament, which in Astartidae is external as wellas the resilium, while in the Crassatellidae this organ is separated from the resilium ..." (Dall) It is interesting to note that the Astartidae seems to prefer cold waters while the Crassatellidae are prevalent in tropical waters and unknown in the cold seas.

Genus Crassatella Lamarck ,1799.

Crassatella fluctuata (Carpenter, 1864) - " Santa Barbara Islands, Calif." (Dall). " Santa Barbara Islands to San Pedro" (Oldroyd). Type locality: Catalina Island, Calif.

While other specific names have been given shells from southern California it is our opinion that the above species is the sole local representative of this group.

Collecting data: Off Avalon, Catalina Island in 25 fathoms 8/1937 (Burch off Catalina Island in 30 fathoms (G. Willett).

Genus Crassinella Guppy,1874. Type (by momotypy), Crassinella martinicensis d' Orbigny.

We have another rather complicated dispute regarding this generic name. The source of this difficulty is confusion with the name Gouldia C.B. Adams,1847. One version of this problem is stated by Dr. Joshua L. Baily Jr. (Per. Comm. Aug. 1944) as follows: " The name Crassinella was proposed by Guppy as a substitute for Gouldia in the belief that this name was preoccupied. But Adams had used the name Gouldia for shells in 1847 and it was not until 1850 that Bonaparte used the same name for a bird. It therefore appears that the bird and not the shell needs a new name. "

The statement of Dr. Baily about the bird needing a new name is no doubt correct. However, this does not quite settle the matter because it seems that when Adams published the name Gouldia it was based upon two very different species, Gouldia cerina and Gouldia parva. The species cerina is a Venerid and parva a Crassinella. An excellent statement of the case for both schools may be found in Ralph B. Stewarts work, Spec. Publ. No.3, Acad. Nat. Sci. Phila, 1930, pp 146-47.

Dr. A. Myra Keen in Proceedings of the Malacological Society of London vol. 23, Part I, 1938, pp 3-31 gives an excellent explanation of the matter in which she states that G. cerina was clearly designated by Dall as the genotype of Gouldia in 1883. If this is true then it follows that Gouldia is a section of Veneridae and Crassinella is the genus for the family Crassatellidae.

Crassinella oregonensis Keen,1938. Proc. Malacological Soc. of London,vol. 23, Part I, 1938, pp31-32. Type locality: South Slough, near highway bridge, Coos Bay, Oregon, in Sect. 14, T. 26, S.R. 14, W., Willamette Meridian, 1 to 2 fathoms. Known only from the type locality.

Crassinella branneri Arnold,1903. " San Diego, Calif. to Panama. San Pedro Pleistocene." (Dall).

Collecting data: This species is not reported taken living by any member of the club in California. It is very abundant in the San Pedro Pleistocene. Another species has been recently described from the San Pedro fossil Crassinella nuculiformis Berry, 1940 , described in Bulletin of American Paleontology, No. 94A- Paleontological Research Institution.

Mr. W.J. Eyerdam reports having collected C. branneri Arnold living at Corinto,Nicauragua in 1939.

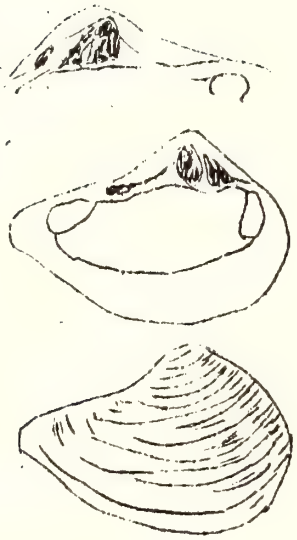
We have in our collection a set of Crassinella pacifica A. Adams from Diggs Pt., L.B.C., Mexico collected by Earl Huffman in June 1934. A comparison of these shells with some of the San Pedro fossils show them to be strikingly close. However, they are somewhat less elongate.

Before leaving this family it becomes necessary to ask a few questions trusting that some of our members will send in the answers soon.

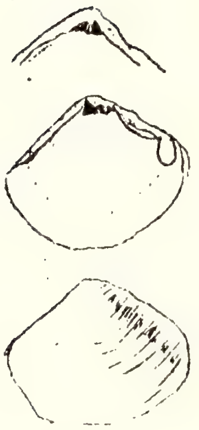
1. What is the species listed in many publications as Crassatellites marginata Carpenter. Keep " West Coast Shells" described it " a minute southern shell about the size of a pin head. It is somewhat triangular, yellowish, and marked with brown chrevrons". This specific name was listed by Kelsey, Vol. 1, No. 2 San Diego Soc. of Nat. Hist. p. 38 from 12 fms. off San Diego. The species is also listed by Orcutt " Molluscan World". Eric Knight Jordan Bulletin of the Southern Calif. Academy of Sciences, p. 155 lists a Crassatellites margarita Carpenter. It would seem logical to assume that this is another reference to the same thing whatever it is ?
2. Kelsey also lists a Crassinella varians C.B. Adams as dredged in 15 fathoms off San Diego. What is it ?

Mr. Allyn Smith sends in the following note regarding question #1. " Discussed your questions today with Hertlein over the telephone. He thinks Jordan's citation of Crassatellites margarita is an error for C. marginata. The earliest reference to Crassatella marginata Carpenter, so far as we can find is in Paetel's Cataloguder Conchilien- Sammlung, part 3, p. 136 (1890) as " Crassatella marginata Cptr. Calforn." There is no printed description that we can find and therefore we suspect that it is a nude name, taken, perhaps from Carpenter's unpublished mss. or labels. Berry (Naut. 21:20) lists " Tivela (?) marginata Cpr." in his Monterey list, based on one valve identified by Dall. Mac and I threw it out as unidentifiable both as to the species and the record itself. We suggest you ignore the whole thing."

See Page 17



Crassatella



Crassinella

Family CARDITIDAE

The following paper was read to the club by Mr. A.M. Strong dealing with the genera,subgenera and species of Carditides from the west coast.

Dall's review and revision of the family Carditidae appears in the Trans. Wagner Free Institute, vol. 3, pt. 6, pp. 1406 to 1436, 1903. In this he divides the family into two subfamilies, Carditinae, with the marsupium in the soft parts, and Thecaliinae , with the marsupium in the ventral portion of the mantle in the female, and protected by an infolding of the valves. He further subdivided the subfamily Carditinae into two groups, the mytiloid form with a byssus and slight ventral gape and the cardoid forms without a gape.

In the mytiloid group of the subfamily Carditinae Dall places one genus, Cardita Bruguiere,1792,Lamarck,1799. For the type he uses Cardita calyculata Linnaeus, the first name to appear on Lamarck's list. Under the genus Cardita Dall places as sections Glans Megerle,1811, type C. trapezia and Carditimera Conrad, 1839, type C. arata Conrad as well as others not represented on the west coast. Grant and Gale show that C. sulcata Bruguiere (equals C. antiquata Linne) was designated as the type by Children in 1832. This species does not belong in the mytiloid group and Cardita cannot be used as Dall used it. The oldest of the sections, Glans,then becomes the genus. Carditimera can well be classed under it as a subgenus. Grant and Gale suggest that Mytilicardia Anton,1839, " of which it is the type" can be used for the species which Dall placed in Cardita s.s.

In the cardoid forms Dall lists a number of genera, subgenera and sections. The first genus he lists is Venericardia Lamarck,1801, for which he gives the type as V. imbricata Lamarck. Grant gives the type as V. imbricata Gmelin. It is to be assumed that these two are the same but it is not so stated. Under Venericardia Dall lists various sections and subgenera. Of these we have on the west coast the following; subgenera Cardites Link, type Cardites antiquata Linne and under it section Cyclocardia Conrad,1867, type C. borealis. Inasmuch as Cardites Link has the same type as Cardita Lamarck it cannot be used as Dall used it. Grant and Gale do not consider that Cyclocardia Conrad can be distinguished from Cardita and that Venericardia " probably should be considered only a subgenus". No one seems to agree with them on these points.

Venericardia is generally considered a good genus. It is only represen-

-ted on the coast by two species which probably belong in some subgenus not mentioned by Grant and Gale nor Dall. Dall lists Miodontiscus Dall,1903, a new name for Miodon Carpenter,1864,not Dumeril, 1857, type M. prolongatus Carpenter. Cardita Lamarck,replacing Cardites as used by Dall can be considered as genus with Cyclocardia as subgenus under it and Miodontiscus considered a genus. Calyptogena Dall,1891 , type C. pacifica Dall was described as a genus and is so recognized by Grant and Gale.

In the subfamily Thecaliinae Dall lists two genera only one of which is known to occur on the west coast. It is Milneria Dall,1881, type Ceropsis minima Dall,1871.

If we take the arrangement in genera and subgenera used by Dall with hinge and other characters and change the names according to the above alalysis , we will have the following.

Subfamily Carditinae. Marsupium seated in the soft parts.

Group mytiloid. With a byssus and small ventral gape.

Genus Glans. Shell quadrate, with slight ventral gape.

Subgenus Glans s.s. Shell short, quadrate, convex, posterior right cardinal often obsolete, species usually small.

Subgenus carditamera. Shell elongate quadrate, lateral teeth strong in the adult.

Subgenus Mytilicardia. Shell elongate quadrate, the laterals obsolete in the adult.

Group cardoid.

Genus Venericardia. Shell large, rounded trigonal, lateral teeth absent or obsolete, two cardinal teeth in the left valve, three in the right.

Genus Cardita. Similar to Venericardia but smaller, with the right anterior cardinal absent, the laterals absent.

Subgenus Cardita s.s. Shell more or less colored, from warm seas.

Subgenus Cyclocardia. Shell white, with a rude periostracum. Boreal and cold waters.

Genus Calyptogena. Shell smooth or faintly concentrically striated. A well marked escutcheon but no lunule. All teeth becoming more or less obsolete in the adult.

Genus Miodontiscus. Shell small,high, with narrow umbones, radially ribbed . Right posterior cardinal absent, a posterior right and anterior left lateral feebly developed.

Subfamily Thecaliinae. Marsupium in the ventral portion of the mantle.

Genus Milneria. The female with a domelike indentation rising from the ventral margin which is closed only by an extention of the mantle edge.

Lamy in the Journ. de Conch., Paris, vol. 66, 1921, reviews all known living species in the family Carditidae. He uses the arrangement in genera and subgenera as used by Dall. If the west coast species given by him are placed under the above arrangement of genera and subgenera the west coast species would be as follows.

Genus Glans

Glans (Glans) carpenteri Lamy (C. subquadrata Cpr., not Conrad)G. minuscula Grant and Gale not needed).California.

Glans (Glans) naviformis Reeve. Chile.

Glans (Glans) sulcosa Dall. Bay of Panama.

Glans (Carditamera) affinis Sowerby. Gulf of Calif. to Panama.

Glans (Carditamera) affinis californica Deshayes. Gulf of California.

Glans (Carditamera) radiata Sowerby. Panama.

Glans (Mytilicardia) grayi Dall (C. crassa Sby. not Lamarck). Gulf of Cal .

Glans (Mytilicardia) tricolor Sowerby. (C. laticostata Sby. not Eichwald) Gulf of California to Ecuador.

Genus Venericardia
Venericardia (?) cuvieri Broderip. (C. crassicostata Sby. and other synonyms). Gulf of California to Panama.
Venericardia (?) megastropha Gray. (C. fl[illegible]ue Michelin & other synonyms) Lower California to Ecuador.
Genus Cardita.
Cardita (Cardita) spurca Sowerby. Gulf of Calif. to Peru.
Cardita (Cyclocardia) alaskana Dall. Alaska.
Cardita (Cyclocardia) barbarensis Stearns. Santa Barbara to San Diego.
Cardita (Cyclocardia) crassidens Broderip & Sowerby. Bering Sea to Kodiak Id.
Cardita (Cyclocardia) gouldii Dall. Off San Diego.
Cardita (Cyclocardia) incisa Dall. Alaska.
Cardita (Cyclocardia) monilicosta Gabb. Santa Barbara Pleistocene,Recent ?
Cardita (Cyclocardia) nodulosa Dall. Santa Barbara to Coronado Islands.
Cardita (Cyclocardia) paucicostata Krause. Arctic Sea to Fuca Straits.
Cardita (Cyclocardia) stearnsii Dall. Puget Sound.
Cardita (Cyclocardia) ventricosa Gould. Alaska to Coronado Islands.
Cardita (Cyclocardia) umnaka Willett. Alaska.

To these should be added one species listed by Lamy from Chile & Peru.

Genus Calyptogena.
Calyptogena elongata Dall. Santa Barbara to San Diego.
Calyptogena pacifica Dall. Alaska to Santa Barbara Channel.
Genus Miodontiscus
Miodontiscus meridionalis Dall. Off Point Loma in 70 fathoms.
Miodontiscus prolongatus Carpenter. Alaska to San Diego.
Subfamily Thecaliinae.
Genus Milneria.
Milneria kelseyi Dall. Monterey to Rosario Bay.
Milneria minima Dall. Monterey to Rosario Bay.

Gardner & Bowles in U.S.G.S, Prof. Paper 189 F, 1939, p. 194 indicate that Venericardia cuvieri Brod. may belong in the subgenus Glyptoactis Stewart, 1930, type V. hadra Dall but this is a Miocene group.

The following notes by Dr. A. Myra Keen (Per. Comm. Aug. 1944) differ from Mr. Strong's conclusions in but few particulars.

Genus Beguina Roding, 1798. Type by monotypy, Chama phrenetica Born-- Chama semiorbiculata Linne.

The species grayi Dall seems to fit here better than in Glans, at least so far as the hinge is concerned; this is a highly unorthodox assignment, however, and I make it with due hesitation.

Genus Cardita
  Subgenus Cardita: spurca
          Cyclocardia: (species as indicated by Mr. Strong)
Genus Venericardia
  Subgenus Venericardia s.s. : megastropha Gray
          Glyptoactis Stewart: cuvieri Broderip.
          Megacardita Sacco: laticostata Sowerby (The Eichwald name is laticosta,which should not preoccupy Sowerby.

I notice that Thiele in his Handbuch der Systematischen Weichtierkunde groups Glans, Mytilicardita, Carditamera, and Beguina together, all as subgenera of the oldest name, Beguina. So far as I can make out, we have no true Mytilicardita in the American area, though there may be some in the Caribbean. The genotype is intermediate in size between Glans and Carditamera with a reverse curve along the ventral margin. Good illustrations of the hinges of the various groups are given by Lamy (Jour. Conchyl. vol.66,1922) The genus Venericardia does seem to be represented by a few living species in the tropics but by none in our area. I am surprised at how many groups seem to be represented in the tropical American fauna. I have compared West coast specimens of laticostata with specimens and illustrations of turgida, supposedly the only living representative of Megacardita, and feel convinced that this is where laticostata belongs.

Glans (Glans) carpenteri Lamy,1922. Jour. Conchyl. vol.66,1922. " Queen Charlotte Islands, British Columbia, to Todos Santos Bay, Lower Calif." (Dall Type locality: Santa Barbara, Calif.

The names subquadrata Carpenter and minuscula Grant and Gale are in the synonymy of the above species.

Collecting data: This is a very common little species taken easily in abundance all along the coast usually under stones, in wharf piles etc. The bathymetric range is rather surprising. We have taken it far up in the southern California sloughs such as Newport Bay, Anaheim Bay etc. and have also brought it up living from as deep as 50 fathoms off Redondo Beach, 15 fathoms off Pacific Grove etc. Dr. Baker dredged it in moderately deep water off the Coronado Islands. (Burch).

Genus Cardita Bruguiere,1792.
Subgenus Cyclocardia Conrad,1867.
Cardita (Cyclocardia) barbarensis Stearns,1890. " Santa Barbara Channel to San Diego, Calif. in deep water" (Dall). Type locality: off Santa Barbara.

The following note received from Mr . Allyn Smith " According to Mac--kenzie Gordon, who made a pretty careful study of this group in the U.S. National Museum, barbarensis is a thin-valved shell from 1000 fms. in the Santa Barbara Channel and is known only from the original lot. I have one of these shells in my collection. It is a good species.

Cardita (Cyclocardia) gouldii Dall,1902. " Off San Diego, Calif." (Dall).
Cardita (Cyclocardia) stearnsii Dall, 1902. " Puget Sound" (Dall).
Cardita (Cyclocardia) paucicostata Krause,1885. " Arctic Sea to Fuca Straits (Dall). Type locality: L[illegible]hafen.

Collecting data: Atka Island, Aleutians, 1932 (W.J. Eyerdam).

Cardita (Cyclocardia) crebricostata Krause,1885. " Point Barrow, Alaska to Monterey, Calif." (Dall). Type locality- St. Paul Island, Alaska.

Collecting data: Note from Allyn Smith " Mac says that this species is not known, for certain, to have been taken south of the coast of Oregon. We have not seen it from Monterey." Reported from Ketchikan, Forrester Island, Alaska 30-40 fms. (G. Willett);Ishut Bay, Afognak I, coll. by W.J. Eyerdam, 1922, 10 fms. mud, Drier Bay, Knight Island, Pr. Wm. Sound, 1923 by Eyerdam; Akutan Island, Aleutians, coll. by I. Norberg,1931, dredged.

Cardita (Cyclocardia) alaskana Dall,1903. Keen " Abridged Check List " give the range lat. 62. Ommitted from Bulletin 112. Grant and Gale place it in the synonymy of the above species crebricostata Krause.

Collecting data: Izhut Bay,Afognak Island, 1922 (W.J. Eyer dam); Victo-ria, B.C. (Newcomb).

Cardita (Cyclocardia) crassidens Broderip & Sowerby 1829. " Arctic and Bering Seas and eastward to Kodiak Island, Alaska" (Dall).

Collecting data: Icy Cape, Alaska (W.J. Eyerdam).

Cardita (Cyclocardia) nodulosa Dall,1919. " Santa Barbara to the Coronado Islands" (Dall). Type locality- off Santa Rosa Island.

An interesting note regarding this species has been received from Dr. Joshua L. Baily Jr. (Per. Comm. Aug. 1944) " If you decide to follow Grant and Stewart in putting our species of Cyclocardia under Cardita , the species called nodulosa by Dall will have to have a new name, as there are already t two other species of Cardita called nodulosa." Inasmuch as Dr. Baily is quite correct about a nodulosa of Lamarck and also Reeve we propose to call it Cardita bailyi until it may get still another name.

Collecting data: off Catalina Island, 50-200 fms. (G. Willett).

Cardita(Cyclocardia) monilicosta Gabb,1861. "Santa Barbara Pleistocene. Recent ?" (Dall). This species is mentioned here merely because it was listed in Bulletin 112. So far as the members know it has never been taken Recent. One notation was sent in by Mr. George Willett " A Pleistocene species, probably a synonym of occidentalis Conrad."

Cardita (Cyclocardia) umnaka Willett,1932. " Trans. San Diego Soc. Nat. Hist. vol.7, no. 9, pp. 85-90 " Umnak Island, Alaska. Washed up on the beach. (G. Willett).

Cardita (Cyclocardia) ventricosa Gould ,1850. " Belkoffski Bay, Alaska to Coronado Islands and Cortez Bank, California" (Dall). Type locality: Puget Sound.

Collecting data: Craig, Ketchikan, Forrester Island, Alaska 20-40 fms. (G. Willett); Monterey records: 35-149 fms. , mud and fine sand, fairly common. Monterey examples are not typical and may be worthy of a subspecific name (A. Smith); Smith Cove, Seattle Harbor, 1920, San Juan Islands, Izhut Bay, Afognak Island,1922, Uzinki, Spruce Island, Kodiak Id. (W.J. Eyerdam).

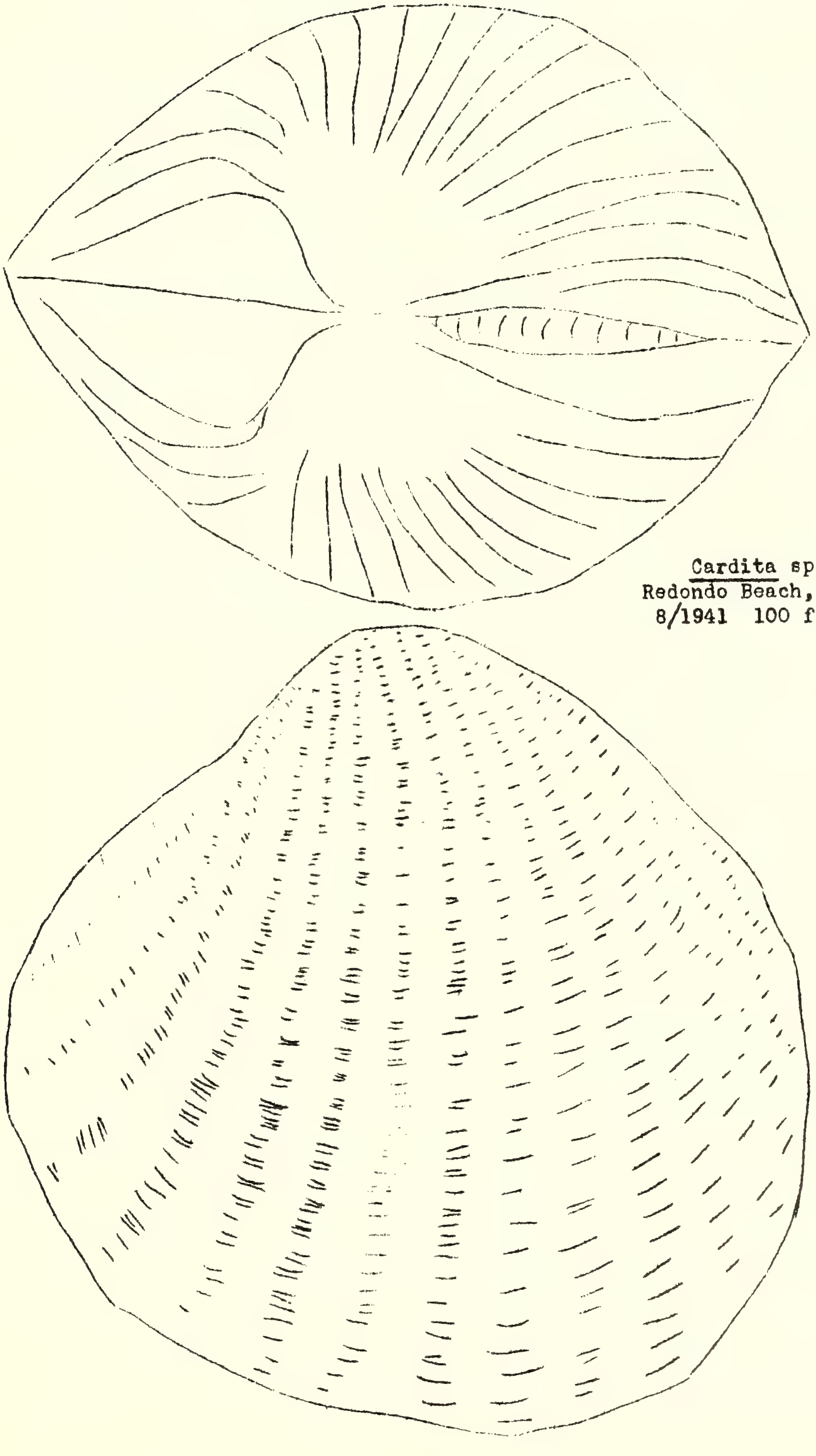
We have a very interesting note from Mr. Allyn G. Smith in which he quotes some observations of Mac Gordon on this species as follows:

" The other main problem is that of *Cardita (Cyclocardia) ventricosa* Gould. There were two species in the type lot. One can be recognized from Gould's measurements and figure, but the other was figured as the type by Stearns who stated that it was the same one figured by Gould. Dall later described a the Stearns specimen as *C. stearnsii* and designated the other large specimen in the lot as the type. There are some who would hold that the Stearns mistake was a designation of type and that the name *ventricosa* must be applied to a species of which only a dozen or so specimens are known. Common sense, however, tells us that Dall should be followed and it may be argued that Stearns designated two types of which Dall selected one; or that Gould's measurements and figures leave no doubt as to which species was intended. As there is no Rule of Nomenclature to cover the holotype of a species, I think the name may be saved for the more common species. However, the Monterey form(of *ventricosa*) is immediately recognizable from the Puget Sound typical form. I think that it deserves a subspecific name based on the more rounded dorsum, lower beaks, and truncate anterior; this also has an effect on the position of the bend at the lower side of the hinge plate below the cardinal tooth. As I see it there is the typical *ventricosa* which extends from Puget Sound region south to the Santa Barbara Islands; the Monterey variety which ranges from Alaska to San Diego; and a transverse form, *C. gouldii* Dall, which is known from one specimen dredged in 822 fathoms off San Diego. The hinge plate of all forms goes through the same variations based on the straight or slightly sigmoidal aspect of the posterior lateral tooth. C. s- *C. stearnsii* is a good species based on the narrower shape from front to back, higher beaks, and the strongly curved posterior lateral tooth."

The following note by Thomas A. Burch accompanies the figures on the next two pages: " It is apparent in these drawings that these two shells are of different shape. Our Redondo Beach specimens are rounder in outline and are distinctly more inflated. While these drawings show a difference in the ribs it is very difficult to show exactly how it is. It is clear to me, but then I have just finished drawing them. The ribs are more pronounced in contour in the Puget Sound specimens and while the drawings may not give the impression at first that the ribs of the northern specimen are the more pronounced of the two- such is the case. The concentric sculpture on the ribs of the southern form consists of flat " plates" which I have represented by several closely spaced lines, while on the northern specimen it is merely of incremental lines. These " plates" tend to line up on Redondo Beach specimens and give a much more definite concentric sculpture than on the others."

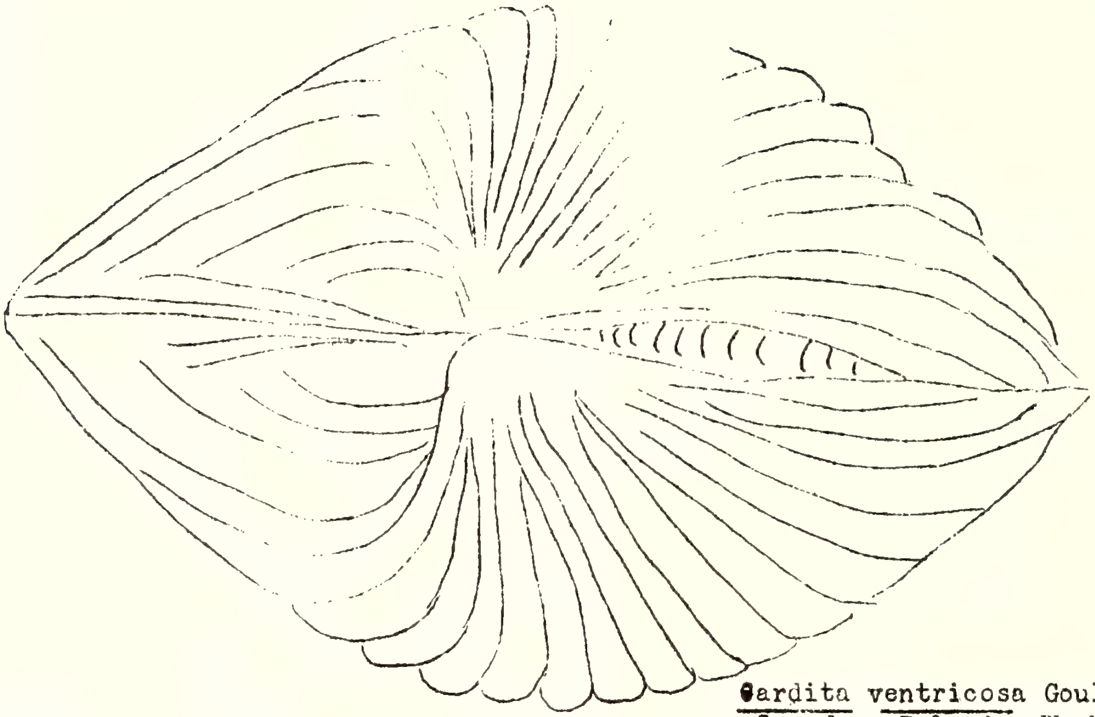
John Q. Burch thinks this should be *Cardita ventricosa redondoensis*, even

#39- p 15

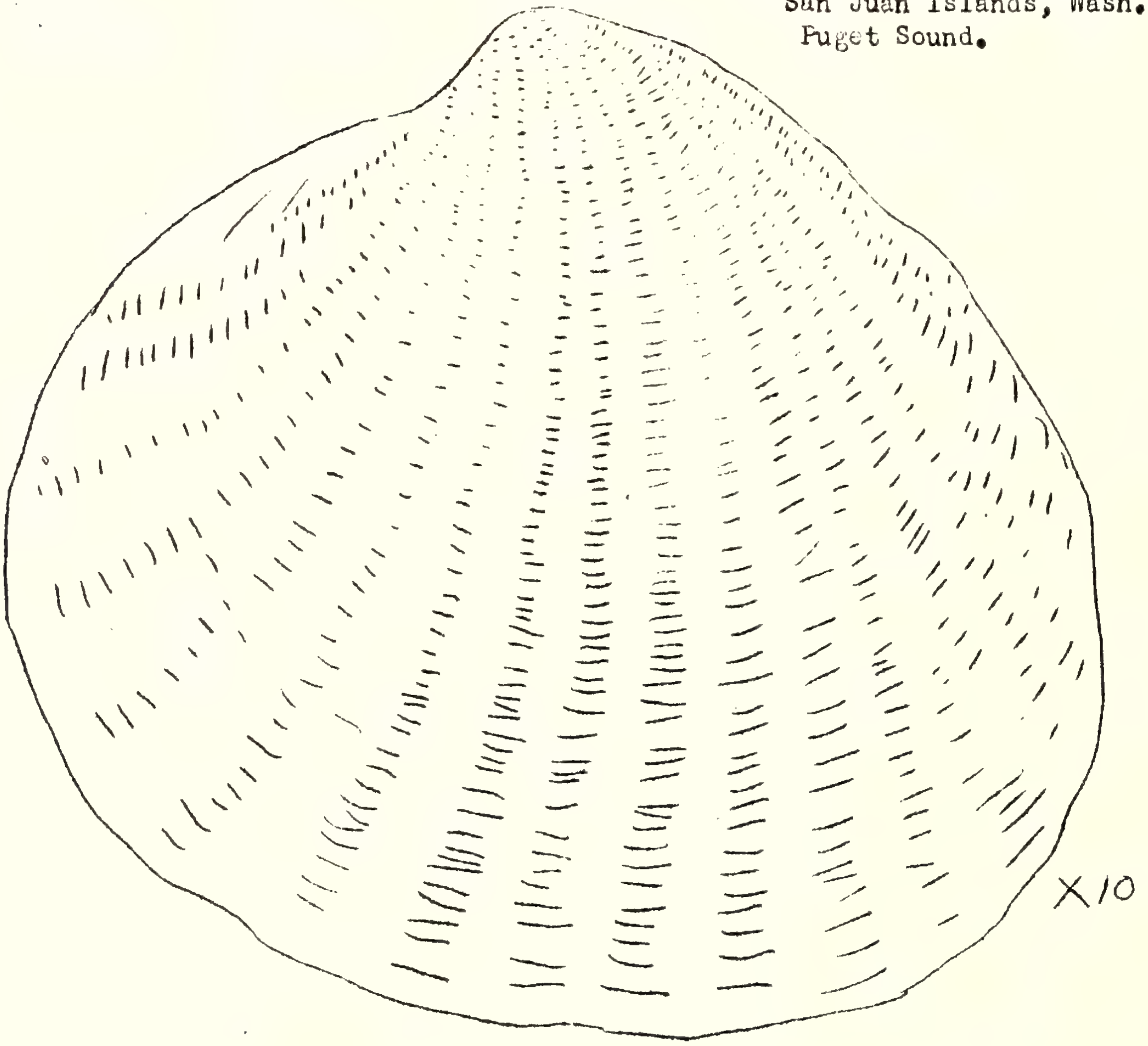


Cardita sp.
Redondo Beach, California
8/1941 100 fathoms- mud.

X 10



Cardita ventricosa Gould
San Juan Islands, Wash.
Puget Sound.



Cardita (Cyclocardia) incisa Dall, 1902. " Unalaska to the Semidi Islands, Alaska." (Dall). Type locality, Unalaska.

Genus Miodontiscus Dall, [illegible] Type: M. prolongatus Carpenter.
Miodontiscus prolongatus Carpenter,1864. " Middleton Island, Alaska to San Diego, California " (Dall). Type locality, near Neah Bay, Washington.

Collecting data: Craig,Forrester Island, Alaska, 30 fms. (G. Willett); San Juan Islands, dredged ([illegible].J. Eyerdam); Victoria, B.C., dredged (Newcomb Monterey record- 5-25 fms. sand, off Pacific Grove, 25 fms. off Carmel, rare (A.G. Smith); dredged in Puget Sound in 1940 by Trevor Kincaid; common in San Pedro Pleistocene(Burch).
Miodontiscus meridionalis Dall, 1916. " Off Point Loma, Calif., 70 fathoms" (Dall). Reported only from the type locality.

Genus Calyptogena Dall,1891. Type (by monotypy), C. pacifica Dall, 1891.
Calyptogena pacifica Dall,1891. " Clarence Strait, Alaska, to Santa Barbara Channel, Calif." (Dall). Type locality, off Dixon Entrance, Alaska, 322 fms .
Calyptogena elongata Dall,1916. " Santa Barbara Islands to San Diego." (Dall Type locality, off Point Loma, California in 275 fathoms.

Genus Milneria Dall,1881. Type: Ceropsis minuta Dall.

Reference- Nautilus v. 50, p. 86, 1937- Dr. Fred Baker. Milneria minima Dall and Milneria kelseyi Dall. The first was originally described as Ceropsis minima. Ceropsis being preoccupied the name was changed to Milneria minima. " In describing M. kelseyi, Dr. Dall remarked that it had been confused with M. minima and that it could best be described by using the two species for comparison. By a curious error he reversed his type specimens so that the description of M. minima is really the description of the new species. To read the description correctly, one must reverse the names throughout the whole article." Ref. Proc. U.S.N.M., LII, 1917, p. 408.

The above note copied here although I think all of the members have been familiar with the situation.
Milneria minima Dall,1871. " Monterey to Rosario Bay, Lower Calif. on Haliotis" (Dall). Type locality, Monterey, Calif.

We have found minima comparatively rare. It was rather common at Arbolitos, Lower California, [illegible] water locality. M. kelseyi is the common form taken by all littoral collectors under stones.
Milneria kelseyi Dall, 1916. " Monterey to Point Abreojos, Lower Calif. under stones" (Dall).

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Continuing the discussion from page 9we have the following data from Dr. A. Myra Keen (Per. Comm. Aug.31,44) " Circe margarita Carpenter, 1855. Mazatlan Catalogue, p. 81. Type locality, Mazatlan. Without seeing the types one cannot be positive about the diagnosis of this, but specimens identified by Carpenter, evidently paratypes, in the National Museum seemed to me to be the young of Amiantis callosa or some such beast. Specimens in our collection under the names " Crassatella marginata" and " Crassatella margarita" mostly prove to be the shells later named Psephidia brunnea Dall, which seems to be the valid name for out California species. An interesting little memorandum on one of the San Diego lots, in Hemphill's handwriting, says:" Copy of Carpenter's note -- Crassatella (Hemphillia) margarita Cpr. I must separate this, being ovoviparous; if I suppress Hemphillia from chitons I will put it in here. Meanwhile call it Crassatella, not Circe." Mr. Willett put me on the right track some years ago when I was puzzling over the problem, and later I verified the identification of the Psephidia brunnea at the National Museum. The spelling " marginata" is evidently an error. At any rate, I think we can write the species off so far as California is concerned." (con.)

" Harking back to the Circe margarita problem. Carpenter on p. 82 of the Mazatlan Catalogue describes a C, subtrigona which is also sometimes quoted from our area. Specimens of this in the National Museum identified by Carpenter seemed to me to be Petricola tellimyalis.

Gouldia varians Carpenter, Oct. 1855. Mazatlan Catalogue, p. 83. Type locality, Mazatlan. This is a Crassinella that differs from C. pacifica (C.B . Adams) in being less compressed, more inequilateral, with finer sculpture.

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We discussed the genus Verticordia in Minutes #38, p. 15. One of the puzzles connected with this group was the name Verticordia acuticostata reported from Dr. Baker's cards in the San Diego Museum and presumably picked up from Mr. Button's list. The following data has been received about this name. Mr. Allyn G. Smith " Verticordia acuticostata was described by Philippi in 1844 as a Sicilian fossil."

And Dr. A. Myra Keen advises us as follows " Verticordia acuticostata (Philippi), 1844. Enum. Moll. Sicil. vol.2, p. 42. This is an east coast species. Our West Coast form was identified as V. novemcostata Adams and Reeve for a time. Dall,1886 (Bull. Mus. Comp. Zool., vol. 12, no.6, pp 285--286), reviews the group and synonymizes novemcostata and caelata Verrill under ornata (D'Orbigny)."

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Volsella senhausi Reeve , an exotic species presumably introduced from Japan with seed oysters has been reported from the Bolinas side of Stinson Beach, Calif. just inside the entrance. Mr. Allyn G. Smith reports that they are more highly colored than specimens in the Hemphill collection from Japan. We hope to receive further information regarding this species.

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Family CHAMIDAE

Genus Chama Linnaeus, 1758. Type (subsequent designation Schumacher 1817) Chama gryphoides Linne. Chama lazarus L. (by sub. desig. Children,1823) is given as the type by many authors.

" Shell orbicular, ovate or oblong-ovate, irregular, inequivalve, profusely ornamented with spines, scales or lamellae; lower valve more or less deeply convex, upper valve flatter; umbones unequal distant, involuted sometimes to the right, sometimes to the left in the same species. Hinge is composed of a single thick oblique slightly crenated tooth inserted in a correspondingly grooved pit in the opposite valve. Muscular impressions two, lateral large. Ligament external, divaricate behind the umbones.(Conch Iconica).

Chama pellucida Broderip,1835. " Oregon to Chile, and Galapagos Islands"(Dall) Type locality: Iquique,Peru. There has been some confusion in our literature regarding the author, some giving Sowerby 1834 . Dr. A. Myra Keen advises us on this as follows:" The author of C. pellucida according to Sherborn is Broderip, and the actual date of publication of the Proc. Zool. Soc. Lon. for 1834 was April, 1835, for that part in which the name pellucida appears."

Collecting data: This is our common California Chama found all along the coast on pilings, breakwaters, rocks etc. We are not sure about the bathymetric range but have taken it from just below the tide mark down to as deep as 25 fathoms on the gravel beds off Redondo Beach. (Burch).

Chama frondosa Broderip, 1835. " San Diego, Calif. to Peru" (Dall). Type locality: Island La Plata, West Colombia.

The California record of this species is questioned. The consensus of opinion is that such a record was based on misidentification. Mr. Allyn G. Smith sends us the following data " Note by Hertlein: " The lamellae of Chama frondosa are frondose, expanded and radially striated. Have not seen specimens from California or northern Lower California."

Chama buddiana C.B. Adams,1850. " Bodega Bay, Calif. to Panama" (Dall).

(Con.)

Dr. A. Myra Keen (Per. Comm. Aug. 1944) states: " The specimen of"Chama buddiana"in the collection of the U.S. National Museum upon which the Monterey record is based is a Pseudochama granti. I saw no other California specimens in that collection. Dall in Bull. 112 lists also Bodega Bay, the "38 0 of my check list. I have no way of checking the authenticity of this record; perhaps, like the Monterey record, it represents a misidentified P. granti.I doubt very much if true C. buddiana occurs in California"

Mr. Allyn G. Smith sends in the following note " Note by Hertlein: C. buddiana does not occur in California. Confused with Pseudochama granti Strong."

Genus Pseudochama Odhner,1917. Kungl. Svenska Vetensk. Handlingar, Bd. 52, no. 16, p. 30. Genotype (by monotypy): P. cristella (Lamarck) -- Chama reeveana Clessin.

In the preliminary discussion of this generic name the following notes were made by John Q. Burch " Is there any distinction other than the fact that Chama attaches by the left valve and Pseudochama attaches by the right ? A number of authors are disposed to ignore Pseudochama even as a subgenus and place the species under Chama.If the only difference is in the attachment by the right valve there must be considerable question about the validity of Pseudochama. Many species seem to be described as attaching by both right and left. Cotton and Godfrey " The Mollusks of South Australia" Pt. I, p. 197 in describing Chama ruderalis Lamarck 1819 state " Usually, when viewed from the upper valve, twisted sinistrally, but occasionally dextrally as in Lamarck's type; the direction of the twist depends on whether the shell is attached by the left or right valve."

The above comments brought a number of replies. Dr. A. Myra Keen (Per. Comm. Aug. 44) advises: " Odhner says (p.31) ." a division into the two genera Chama and Pseudochama (comprising also Echinochama) is necessary. The distinguishing characters are the following: The dentition in Chama may be expressed (in accordance with Bernard, 1895) thus:

Chama	left valve	2a	plus b	4b	II
	right	3a	1	3b	I
Pseudochama	left valve	2a	2b	4b	II
		1	3b		I

The difference is more obvious in young than in older shells"
Odhner in the remainder of his discussion insists that the difference is more than a simple matter of which valve became attached, that there is a fundamental difference in the soft parts which is reflected in the different dentition of the hinge."

Therefore, with some mental reservations we retain the genus.

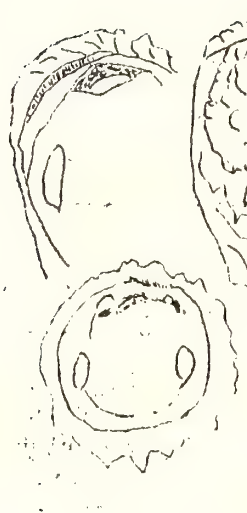
Pseudochama exogyra Conrad, 1837. " Oregon to Panama" (Dall).
Type locality, near Santa Barbara, Calif.

Collecting data: Our common sinistral Chama abundant in the intertidal.

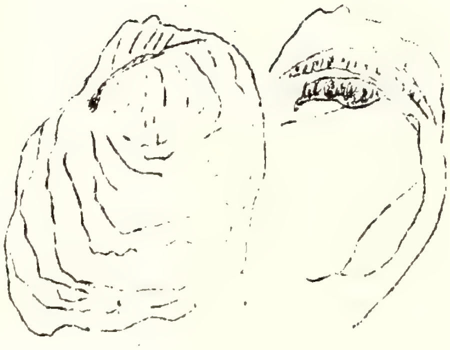
Pseudochama granti Strong,1934. (Nautilus, vol. 47, no.4, p. 137,April,1934) Keen " Abridged Check List" gives the range lat. 34 to 37. Our experience has been Catalina Island to Monterey.(Burch) San Benito Ids(28 N.) (G.Willett

Collecting data: off Monterey, Calif. on shale in 20-40 fms., off Avalon Catalina Id.,in 25-35 fms., off Redondo Beach, Calif. in the gravel at 25 fms. but also from the rocks in 75 fms. or slightly deeper (Burch);

P. granti has well developed spines on the under valve. It is smaller deeper and disposed to be more highly colored than exogyra.



Chama



Pseudochama

Family THYASIRIDAE
Genus Thyasira Leach (in Lamarck,1818). Type (by monotypy, fide Dall,1903) Tellina flexuosa Montagu,1803.

" Shell subglobular, earthy; umbos directed forward; posterior side furrowed; lunule absent; ligament in a groove, partly external; hinge edentulous, the hinge margin indented in front of the umbos, which form a pseudo tooth; muscular impressions elongated; pallial line simple; margins simple."

Subgenus Thyasira s.s. " Valves with edentulous hinge, the anterior dorsal a area more or less impressed, the posterior more or less radially sulcate or plicate" (Dall, 1903).

Thyasira bisecta Conrad,1849. " Off Alaska Peninsula and southward to Oregon Coast" Also Miocene and Pliocene." (Dall). This should no doubt also include the Pleistocene now. It is not uncommon in the Timm's Point deposit San Pedro once considered Pliocene or older but now generally thought to be Pleistocene.

Keen " Abridged Check List" gives lat. 44-56 for T. disjuncta (Gabb) which brings up the problem of which we elect to use for our recent species. A note on the anatomy etc. of the species appeared in Nautilus vol. 32, p. 103 by Dr. Dall. An article in Nautilus vol. [illegible]1, pp 129-131 by Nellie May Tegland " Thyasira disjuncta Gabb not Thyasira bisecta Conrad the Recent West Coast Shell". The arguments pro and contra are too extensive to warrant repetition here. Grant and Gale discuss the Tegland opinion, 1931, p. 282 but do not accept it retaining the name bisecta for the Recent species. Grant and Gale claim to have examined a series of specimens from the Miocene to the Recent and found them specifically identical. So since the name bisecta has been in almost universal use for a great many years it seems that the burden of proof should be greatly upon those asking us to change it.

Reported from Puget Sound by Walter J. Eyerdam.

Thyasira gouldii Philippi, 1845. " Bering Strait to San Diego. Also Atlantic (Dall). Johnson gives the range on the Atlantic " Greenland to Connecticut, 5-400 fath."

This species was first identified as Thyasira flecuosa (Montagu) , the genotype, from England. Carpenter called it flexuosa and was followed for many years by Dall, Cooper and others. Grant and Gale, 1931 discuss this and state that the differences are slight. So gouldii should be of special interest to us since it is almost if not identical with the genotype. Type locality of T. gouldii is Massachusetts Bay. It is a very common species in the Timm's Point Pleistocene deposit at San Pedro. Mr. Walter J. Eyerdam sends in an interesting note as follows: Thyasira flexuosa gouldii Phil . Note... Prof. Nils Odhner the foremost authority on the mollusca of N. Europe considers T. gouldii a variety of flexuosa. Comparisons between my European and Alaskan specimens shows minor differences. The European flexuosa is more fragile and white while the Alaskan specimens are rougher, heavier and rather a dirty white" Collecting data: Drier Bay, Knight Island, Prince William Sound, Alaska, 10 fms. (W.J. Eyerdam); Hofsos, and Reykiavik, Iceland, dredged by O. Torrell (Eyerdam Coll.) No other member of the club reports gouldii Recent from this coast.

Thyasira trisinuata Orbigny,1846. " Sitka, Alaska, to San Diego. Also Atlantic (Dall). Johnson gives the range in the Atlantic " Labrador to West Indies, 15-192 fathoms." Type locality: Martinique and Guadeloupe. Also reported from the Mediterranean. The subspecies Thyasira trisinuata polygona Jeffreys,1863 was as early as 1901 placed in the synonymy of the typical by Dall, and the consensus of opinion favors that disposal. We mention it because it is listed in Bull. 112.

Collecting data: Frederick Island, Alaska , 12 fms. (Lewis); Ketchikan, Forrester Island, Alaska, 30-50 fms., Point Loma, San Diego Co., 30 fms. (G. Willett).

Thyasira cygnus Dall,1916. " Southeastern Alaska" (Dall). Type locality: Cygnet Inlet, Boca de Quadra, Alaska in 160 fathoms.

Thyasira barbarensis Dall,1889. " Fuca Straits to Gulf of California" (Dall) Type locality: Station 2840, Santa Barbara Islands.

Note by Dall,1901 " Recalling T. sarsii, but differently proportioned. The specimens named Axinus flexuosus by Cooper, from 120 fathoms, near Catalina Island, Calif., prove to belong to this species."

Collecting data: We have identified specimens dredged off Redondo Beach Calif. in 75 fms. mud bottom as this species. The only interesting thing about it is that it seems to be located in colonies. It is quite rare other than that when we did strike them we brought them up by the hundreds in the same dredge haul. Then we might not pick up another for months. They are very fragile and a large part of them were always crushed in the dredge (Burch); off San Pedro, Calif. in 20 fms. (G. Willett).

Thyasira excavata Dall,1901. " Oregon to Gulf of California" (Dall). Type locality: off Tillamook, Oregon.

" A well marked species notable for the sharp fluting of the posterior dorsal area" (Dall, 1901).

Thyasira tricarinata Dall, 1916. " Off Santa Barbara Islands, Calif. in 1,100 fathoms" (Dall). Known only from type locality.

Subgenus Axinulus Verrill and Bush,1898.

" Shell minute, ovate or oblong, with the dorsal areas obsolete."

Thyasira (Axinulus) ferruginea Winckworth,1932. Jour. Conch. vol. 19, no.7 pp 242,251. Dr. A. Myra Keen advised us regarding this specific name " The name Thyasira ferruginosa (Forbes),1844 is preoccupied, a fact overlooked in my check list. Winckworth has caught the homonym."

" Aleutian Islands. Also Atlantic and arctic" (Dall). Johnson gives the Atlantic range " Greenland to North Carolina, 20-1525 fathoms."

Genus Axinopsis G.O. Sars,1878. Type Axinopsis orbiculatus Sars.

" Shell discoidal, tumid in the middle, compressed toward the margins; umbones slightly prominent; no external ligament; valves thin, pellucid, white, concentrically striate; cardinal tooth in the right valve obtusely elevated, recurved; in the left valve elongated, subhorizontal; cartilage narrow."

Axinopsis sericatus Carpenter,1864. " Aleutian Islands south and east to Puget Sound and Catalina Island, Calif." (Dall). to Todos Santis Bay, West Mexico 7/1938 (Burch). Type locality: Catalina Island, Calif.

" Shell small, circular, flat, epidermis silken" (Carpenter).

Axinopsis viridis Dall, 1901. " Arctic Ocean, on the west to Japan, on the east the Aleutian and Coronado Islands" (Dall). Type locality: Plover Bay, Bering Strait.

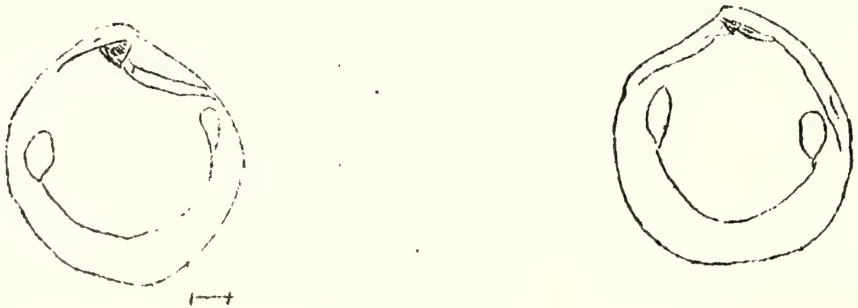
In the preliminary discussion of this genus John Q. Burch made the following confession of ignorance " I would like very much to know whether or not there are really two species on this coast. Axinopsis is such an unbelievably common shell in mud from around 100 fathoms that the custom is to wash out through a screen and then pick the other species out of the countless thousands of Axinopsis. One dredge haul almost anywhere would supply all of the collectors in creation with an extensive set. I have had sets of the species taken from off Redondo Beach labelled viridis by experts and from the same dredge haul they also find sericatus. Dall says sericatus is pale yellow and viridis a silky green. You get all shades of both including some blotched with both in my opinion. Inasmuchas they all easily fit Carpenter's description of sericatus I have been disposed to label all of them sericatus until some one shows me how to separate them."

Dall states of viridis " A silky green, solid, orbicular species with very distinctly developed cardinal teeth" and of sericatus " More ovate, flatter and thinner, with a less developed dentition and pale yellow periostracum."

Mr. George Willett advised me on this as follows: " If I have these properly figured out (following illustration by Dall and Oldroyd), sericatus is higher than long, and viridis is as long as high, usually longer." (See Proc. U.S.N.M. 23: pl. 40, figs. 1 & 2). Mr. Willett is of the opinion that all of the Redondo Beach specimens are viridis. We have accepted Mr. Willetts identification.

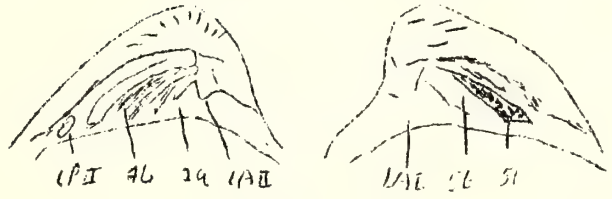
Collecting data: for A. sericatus : Craig, Alaska (G. Willett); Monterey record, 15-25 fathoms, Monterey Bay, in sand, occasional (A.G. Smith) Drier Bay, Knight Island, Pr. Wm. Sound, Alaska, dredged, 1923 (W.J. Eyerdam); Akutan Island, Aleutians, 1932 (I. Norberg.)

Collecting data: for A. viridis : Craig, Alaska (G. Willett); Kodiak Island, Pr. Wm. Sound, Alaska, Victoria, B.C.- 5015 fms. (Lewis); Akutan Island, dredged 1931 (I. Norberg); Illuliuk Harbor, Unalaska Island, dredged 1932 (W.J. Eyerdam); Monterey record: 36-86 fathoms off Point Pinos, in soft dark gray and green mud (USFC Stas. 4464,4475)- 298 fathoms off Point Sur, in yellow sand and mud (USFC Sta. 3187) (As you can see from the above we are calling the material Mac dredged sericatus, and the Albatross shells viridis. We do'nt have enough material to decide on the essential differences. Would like to see a few of your Axinopsis from off Redondo. I have a set, labelled " A. viridis" from the Arctic Ocean in 30-32 fathoms (Lat. 68 37'N Long. 168 53' W.), collected by Woodbridge Williams. They are not solid or orbicular, as this species is definied by Dall, so I am changing my label on these to A. sericatus.)



Axinopsis

Cardita antiquata (Linné)


LPI
4b
2a
LAII
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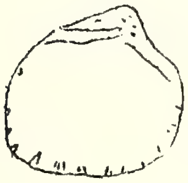
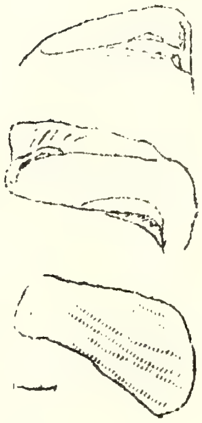
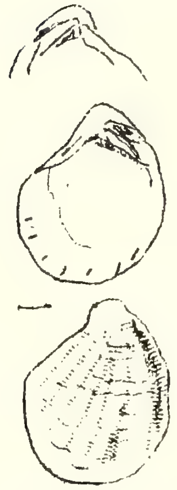
after Lamy 1922



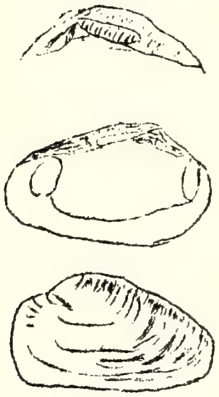
← outline of shell after Bucquoy Dautzenberg and Dollfus



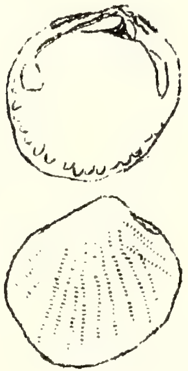
MILNERIA



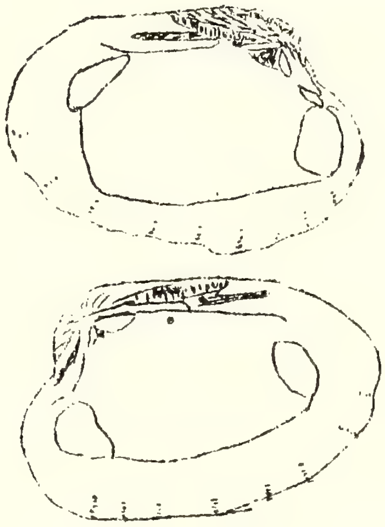
MIODONTISCUS



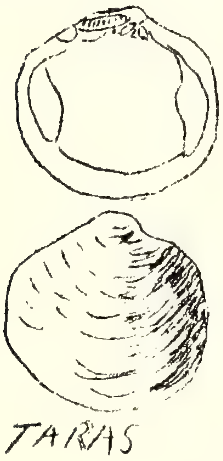
CALYPTOGENA



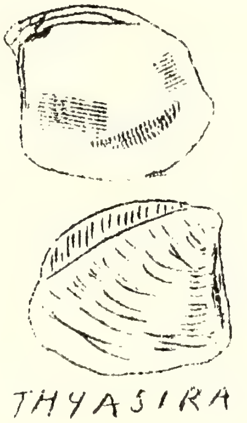
CARDITA



GLANS



TARAS



THYASIRA

Family UNGULINIDAE (DIPLODONTIDAE)

Genus Taras Risso,1826 (Diplodonta Brown. 1831) Type: Taras antiquatus RissO
" Shell suborbicular, smooth; ligament double, rather long, submarginal; hinge teeth 2.2, of which the anterior in the left valve, and the posterior in the right are bifid; muscular impressions polished, anterior elongated."

The opinion that the genus Diplodonta must be abandoned as a subjective synonym of Taras has been almost entirely accepted by the more recent students. Grant and Gale, 1931, p. 293- Ralph B. Stewart, Spec. Pub. no.3, ANSP p. 193. Grant and Gale 1931 suggest that the entire family should probably be included in Lucinidae.

Subgenus Taras s.s. " Shell with growth lines only, rather ventricose, valves inequilateral."

Taras aleuticus Dall,1901. " Cape Lisburne, Arctic Ocean, to the Aleutians and eastward to Sitka Bay, Alaska." (Dall). Drier Bay,Alaska (Eyerdam)

" A chalky, subrectangular species, with coarse epidermis. The young have a smooth surface and dark gray periostracum." (Dall).

Taras orbellus (Gould) 1852. " Pribilof Islands, Bering Sea to Gulf of California" (Dall). Type locality: San Diego, Calif.

This is our common southern California species. It is a subglobose shell with inconspicuous beaks and fine growth lines. Dall and others all mention the habit of the species in forming a nest of sand and other material cemented by musus. However, we have taken this species in great numbers in places showing no inclination to make such a nest. For example the species is very common at San Onofre, Calif. in the rubble reef usually among the worm tubes and I have never taken a specimen there with a nest. However, the nest is the common thing with it in such places as Mission Bay, (Burch) ; Pr. Wm. Sound Alaska, 18 fms. (Lewis); Sitka,Ketchikan,Forrester Id.,Alaska, 10-20 fms. (G. Willett); Seattle in mud, Hoods Canal, Wash. Izhut Bay, Afognak Id., Alaska, 1922 (W.J. Eyerdam);

Taras subquadratus (Carpenter), 1855. " Catalina Island, to Panama"(Dall). Type locality: Maxatlan, Mexico. We have dredged specimens tentatively referred to this species off Redondo Beach, Calif.and off Santa Monica in 25 fathoms which might be an extention of ranhe slightly. However, we have never been very happy about our ability to separate orbellus and subquadratus. Dall states " More compressed and thinner than orbella, and of different outline." While it is true that our dredged specimens seem to be uniformly " more compressed and thinner" it is also true that it is possible to select especially young specimens from a series of orbellus from such localities as San Onofre that seem to have the same outline as the dredged specimens. (Burch). Note from Mr. George Willett " I see no way to separate adults by shell characters".

Subgenus Felaniella Dall,1899. Type (by orig. desig.) Felania usta Gould.
" Shell like Diplodonta, but heavy, compressed, externally smooth, with a conspicuous dark periostracum and less equilateral valves." (Dall).

Taras (Felaniella) sericatus (Reeve), 1850. " Monterey, Calif. to Panama" Dall gave the range San Diego to Panama, but Keen " Abridged Check List" gives lat. 8-37 and the Burches dredged it off Monterey also in 1940.

Grant and Gale 1931 consider this species conspecific with the Pliocene form Taras parilis(Conrad) and make it a subspecies of parilis.

We identified our specimens from off Monterey largely by the fact that they did have the " shining pale olive horny epidermis" mentioned by Reeve in the description (Burch). Allyn G. Smith reports having dredged a specimen off Monterey in 15 fathoms, sand.

Notes on Ensis macha Molina

by Walter J. Eyerdam

In December 1938 while collecting plants along the uninhabited coast of Patagonia I found a sandy beach about fifty miles south of Comodoro Rividavia where a severe catastrophe had befallen the molluscan population. Either an unusually severe storm or a winter freeze-out at low tide had destroyed a large colony of Ensis macha Molina, a razor clam about six inches long. Millions of shells were cast up on the high water line and mixed in the sand. A few Spisula and the following gastropods were also found in the drift: Chorus xanthostoma Brod., Olivancilaria braziliana Kiener, and Bullia squalida Kiener.

Farther down the coast on the same day, which was December the 29th, 1938 we passed a long stretch of sandy coast where we were assailed by the stench of the rotting carcasses of many thousands of seals that had been slaughtered by sealers some months before for skins. We did not stop to look for shells or plants along this disagreeable shore.

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The note in Minutes #38 Back Page brings the following note from Mr. Eyerdam: " Referring to the " Snail that Feeds on Rubber" I am sure that the species is Achatina fulica Ferrussac which I found in abundance around Singapore in 1930. My largest specimen is 4½ inches long and perhaps the very largest overgrown shells might sometimes reach a length of six inches. Whoever reported land snails 8 to 10 inches long did not measure them as there are no land shells that get that big. Achatina fulica is a native of Madagascar and the adjacent shores of Mozambique Chennel. In the French African colonies various species of Achatina are prized as food and are often to be found in the native markets. I do not doubt that the Japs are accustomed to eating them as they eat a good many kinds of snails so it should'nt be too difficult to hold down the Achatina in Malaya. On the island of Ceylon Achatina fulica has been quite a menace to planters. The natives being mostly strictly vegetarian would perhaps have an aversion to eating them, but I have read that it is a part of the early morning routine to gather these large snails while they are still crawling about, and destroy them. Achatina fulica is the only large snail that I know of in the orient that has become a widespread pest. They not only like to eat young rubber plants but are quite indiscriminate in their vegetarian diet. In an old greveyard near Singapore I found the dead shells everywhere and the live ones hiding under stone slabs. It is quite possible that the species which is really an abominable pest to the planters has greatly increased on account of a general lack of vigalance and labor shortage under the Japanese occupation of Malaya."

And another note from Mr. Eyerdam on the exotic Mytilus. " Upon request from Mr. Allyn Smith I have sent him a specimen of Mytilus dunkeri which I collected at Port Arthur, Manchuria, on the Japan Sea. It is almost identical to the California specimens except that it has an interior irridescent nacre. I also sent him a number of other species of Mytilus that approach Mytilus dunkeri in appearance . The next nearest species if Mytilus tyrrhenus Monts. which I have from Sicily and Malta. It also has the nacre and resembles it closely in outward appearance. Perhaps someday a comprehensive monograph on the Mytilidae of the world would solve a good many puzzles in geographical distribution and nomenclature in this family.

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Pleurobranchus californicus Dall- Mr. Allyn Smith has sent in his collecting records for this species as follows:

11 mi. N. of Ft. Bragg, Mendocino Co., 1 specimen coll. 19-VII-1936.
3rd Beach, Pacific Grove, Monterey Bay, 2 specimens, coll. 8-VII-1913.
Breakwater, North Id., San Diego, 12 specimens, coll. 3-V-1919.

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A few rambling personal opinions of John Burch-

Back in my college days an amateur athlete who received any sum of money for his services immediately lost his amateur standing. In later years it is a matter of little or no concern whether we are considered amateurs or not. The pursuit of our interest, mollusks, is not an inexpensive avocation. In the attempt to promote collecting and dredging trips it not infrequently becomes necessary to purchase equipment, charter or purchase boats, and take care of other things involving an expenditure many of us cannot afford financially. In trying to solve such problems some of us have at times sold duplicate specimens and shares in trips. Not that it matters but it does seem a bit absurd to classify as dealers, collectors who at no time intended to engage in a commercial enterprise for personal profit. The Burches have been among those although at no time having a business establishment not any intention of having one. Nevertheless we seem to be listed rather generally as dealers. Perhaps we have been in a small way. However, we have nothing for sale at this time and it is interesting to note the number of persons who write us wishing to purchase almost everything from shell jewelry to giant Tridacnas. We are not interested in our amateur standing and would no doubt happily dispose of duplicates of the above mentioned Tridacnas if we happened to have them on hand.

At present we are confining our activities along this line to post war planning. When it is just stage money we are spending we might as well make it good. A few of the large expeditions have done a limited amount of deep water dredging off our coast and around and beyond the channel islands. However, all of the specimens seem to have dissapeared into the inner vaults of a few of the largest institutions. It makes an interesting fireside talk to propose a cooperative expedition. Of course, if we were fortunate enough to interest an ' angel', in the parlance of the theatre, we would happily disdain all consideration of the so called ' filthy lucre'. However, to really get down below the ordinary dredge limits it seems that we would need to expend not less than $1,000. for cable alone. Then it would be necessary to charter a large power boat equipped with the proper kind of winch. And if this worked out we might propose a trip of several months down the coast of west Mexico and up into the Gulf of California collecting along the shores of all the islands and dredging also. The cost of such a program would run into a sum that is definitely ' not hay'. To try to raise the money by selling shells to the public is out. We tried that. It is too much trouble. However, if enough of us were interested, we might try selling shares. Then if we had 100 shares and brought up 500 specimens of some fine shell each share would get 5 etc. We would probably have to have a committee to look after that end of it, and we would also no doubt have to have an agreement regarding the disposal of possible new species, where to place the types etc. As I said when I started this ' pipe dream' we can squander as much of this kind of money as we wish. But please do not send any other kind of money to us. It is very questionable if any of us will ever be able to get away from the job long enough to do any more than talk about it.

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The Nautilus has been received- Among the other fine papers there are several touching the fauna of this coast- " West American Field Slugs(Deroceras)" by Dr. H.A. Pilsbry, " Shells Dredged in Panama Bay " by Maxwell Smith, and " Peruvian Land Mollusca-III " by Dr. H.A. Pilsbry.

" Mollusks of the Clearwater Mountains, Idaho", Proc. Calif. Acad. of Sci. 23:537-554, by Allyn G. Smith. This fine paper was reviewed by Dr. Pilsbry in the current Nautilus. A new species Allogona lombardii A.G. Smith is described. This paper should be immediately added to all libraries interested in the land and fresh water shells of the west.

Minutes of the August Meeting of the Conchological Club of Southern California

The meeting was called to order by the president, Mrs. E.P. Chace. There being no corrections or additions to the minutes as sent out to the members, they were officially announced as standing approved as printed.

Mrs. Burch stated that she had heard from Mrs. Clark, that she was well and would be back soon.

Mr. and Mrs. Edmonds were present, and they stated they had been up where Mrs. Clark was staying, picking peaches, and had a fine time together.

Several visitors were present and welcomed by all. Amy and Rosanna Stockley, Laura M. Kniffen, Delia L. Wilson, S.S. Williams. Two of the boys from Dr. Hill's summer classes were also present, H. Ameeligh and S. Foster. Fifteen members were present, of whom M.E. Caruthers was with us for the first time in months.

A member of the Nomenclature Committee brought to our notice a pamphlet " Mollusks of the Clearwater Mountains, Idaho", Proceedings of the California Academy of Sciences, Aug. 18th, 1943, by Allyn Smith.

Hardly any collecting was reported. The Edmonds collected some land snails, while in the north and had sent same to Dr. Gregg for identification.

The program committee introduced Dr. Wendell O. Gregg as the first on the program of the day, to discuss LYONSIIDAE.

Following this Mr. E.J. Post took up CUSPIDARIA.

Meeting adjourned to continue discussion next month.

E.P. Baker, Secretary pro. tem.

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Meeting of the September Meeting.

The Conchological Club of Southern California met in the Directors Room of the Los Angeles County Museum at 2:30 P.M., Sept. 3, 1944 with 24 members present.

A nice collection of fresh water shells were on hand for distribution which the members appreciated and took care of in short order. A motion was made and carried that the secretary be instructed to write to the donor, Mr. Ralph E. Dury of Cincinnati, Ohio.

There were no reports or standing committees offered, so the study of the west coast Pelecypods was taken up.

Irene Baker took up the study of ASTARTIDAE, followed by A.M. Strong with Carditidae and Don Smith with THYASIRIDAE.

Time did not permit him to complete his report which will be resumed at the next meeting in October. The meeting was thenadjourned.

Effie M. Clark, Secretary.

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A few years hence some of you may be slightly confused by hearing of shells collected by John Q. Burch and also by Grandpapa John Q. Burch. The young John Q. was born Sept. 1. Grandmama Rose, Grandpapa John Q. and the parents, Thomas A. and Beatrice are proud indeed of the new arrival.

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We have a newsy letter from Dr. W.J. Clench " Have been snowed under at this end- my entire staff on vacation or away on war work- a few are now back- and Joe Bequaert is due back from Liberia this week. Hope to have 24-28 pages of Johnsonia by middle of October. Hope to have a short MSS for Jan. soon." Incidentally Dr. Clench mentioned that Johnsonia is proofread 10 (ten) times. Immagine it. It is hardly necessary to suggest that these minutes make the horible exhibit of a paper that is never even proofread the first time.

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Roy L. Morrison, 3745 Grim Ave., San Diego 4, Calif. " Enclosed find a "soap wrapper" to help with the postage on my copy of the Minutes of the Conch. Club. The notes are very worth while and will make a fine volume in the years to come.

MINUTES OF THE LONG BEACH SHELL CLUB

The Long Beach Shell Club met in the Childrens Room of the Main Library September 10, 1944.

Mr. Ralph Bormann, the president called the meeting to order. The report on shell collecting was as usually " No gas, no beach, no shell collecting".

Reporting on her recent trip east Mrs. Alice Paxon told of an interesting visit with Dr. Pilsbry at the Philadelphia Academy of Sciences. She showed some specimens of Mexican snail shells almost microscopic in size- a gift from Dr. Pilsbry. She also displayed a box of miniature shells she had collected on the Florida Keys.

Mrs. Ralph Bormann gave the principal talk and it might have been titled " The Evolution of a Shell Collector". From interest arouded by son Ralph's school collection consisting of twenty five specimens bearing their common names, the Bormann's have gone far with their collecting. They have located new species which have been named for them.

Mrs. Bormann's main talk was on collecting from Morro Bay to Piedras Blancas. The beautifully mounted shells displayed were taken from that region. After Mrs. Bormann's talk Mr. Bormann entertained the group by relating in his most humorous way his experience in collecting Geoducks* The Geoduck being an elusive creature- now you have it, now you don't- kept Mr. Bormann one hour getting one lone specimen. Having learned the Geoduck's tricks the next specimens came easily. Meeting adjourned by Mr. Bormann.

Grace Stillwell, Secretary.

* Editors note: Geoduck is the Indian name for the species we know as Panope generosa Gould. However, like many other common names it includes all subspecies and is often applied to the large Schizothaerus and others. Geoduck is given a pronounciation by the Indians a little unusual, the "eo" having the sound of "oi" as in oil.

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Clavus (Cymatosyrinx) hemphilli (Stearns),1871. Some time ago we sent a set of this species to our associate, Mr. Henry Dodge of Scarsdale, N.Y. who has written us a note about it. " In going over my Turridae this summer I have examined the Clavus hemphilli Stearns, which you sent me in 1942. I was interested in the position of the shell in the family and note that Dall(Bull 112) puts it in subgenus Elaeocyma of genus Cymatosyrinx, while Grant and Gale 1931, which you followed, puts it in subgenus Cymatosyrinx of genus Clavus. In looking up these references, I had a chance to read Grant and Gale's description of this species,and look at his plate. It does not seem that your shell is the one described and figured there. " oblique axial riblets" of the description of hemphilli, and differs in other respects. Grant and Gale do say that these riblets"often become obsolete or indistinct on the body whorl", but in my shells there is no trace of ribs on any of the whorls. Also my specimens have deeply incided spiral lines on the lower part of the body whorl. The shell may be a fairly variable one, or my specimens may be worn tthough they do not appear so. If the ones you sent came from a lot of which you still have individuals (from Ensenada, Mexico) will you take a look,and when you get time write me what you think ? I am enjoying the Minutes more every time and wait for them eagerly."

The specimens from Ensenada, Mexico are from Todos Santos Bay which is the type locality of hemphilli. It is a very variable species showing every shade of intergradation from ribbed to smooth. I am sending Mr. Dodge a much larger series which will show this. We have tried to separate some of the subspecies and a few of our correspondents may have sets we have labelled C. hemphilli aeolia Dall dredged off southern California. I will be glad to hear from any of the members having opinions that this is not one species. (John Q. Burch).

We are in receipt of the following interesting letter from Dr. F.M. MacFarland of the California Academy of Sciences. The excellent photographs are at hand and there is no question abput accepting Dr. MacFarland's welcome correction.

" I am very much interested in the account you gave in the July Minutes of the white Pleurobranchus taken by Mr. and Mrs. E.P. Chace at Crescent City, and intended to write to you at once concerning it. I have recently been studying the group rather closely as a part of an extensive paper on the Pacific Coast opisthobranchs which I have well along toward completion. I have no doubt but that the form in question is the Pleurobranchus californicus of Dall described in the Nautilus, Vol. XIV, pp.92-93,1900 as from San Pedro. The syntypes are in the Stanford Paleontological Museum here and I am inclosing a photo of them herewith. In photographing them I did not take them from the glass covered box in which they are sealed and a bit of black cotton is lying upon the spire end of the larger specimen. Your figures agree well with them, and especially the one of the microscopic detail of the shell sculpture which shows under strong magnification in the smaller shell. It is the same as what I have in specimens from Monterey bay near Pacific Grove. The shells of these animals are very fragile and are quite difficult to remove without injury, but Dall's specimens are exceptionally well preserved, however. I fear that the well deserved name of chacei must be relegated to synonymy, for which I am sorry. It is a great pity that Mr.and Mrs. Chace did not preserve the animals from which they took their specimens, for the anatomical study is really essential in the opisthobranchs even if some of them have well developed shells. " By their works ye shall know them" seems to be emphatically true here.

I have collected but once at Crescent City, and then was not fortunate enough to run across this Pleurobranchus, but I plan to go up again when gas is once more obtainable. The range of Pleurobranchus californicus seems to be from San Pedro to Crescent City now. Pleurobranchus digueti appears in many lists from southern California. I have studied it in detail in specimens from the Gulf of California, but have no reliable records from more northern points. Do you know of any ? I should very much value the chance to examine such material. Berthellina engeli (formerly Berthella plumula) occurs in the gulf, and I have worked up its anatomy along with P. digueti. It has not yet been taken along our coast. Another California Pleurobranchus, as yet unpublished, I have worked up in my MS. and it may be possible that it has been identified as Pl. digueti by others, or both may actually occur. With all good wishes, Cordially yours."

Allyn Smith calls attention to another interesting thing regarding this group. " Pleurobranchus digueti Rochebrune, (p.18)- Dall evidently was confused about this species, as he gives duplicate references in Bulletin 112 under Pleurobranchus (p. 65) and under Lamellaria (p. 166)."

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Mr. Allyn Smith sends the following notes:

Antiplanes major Bartsch- We believe that this is the species from relatively deep water that we have been calling A. perversa Gabb, although BartschS description does not specify whether he is naming a dextral or sinistral shell. Have written B. about this. John Strohbeen , of Santa Cruz, who works with Andy Sorenson and the Turvers, says that each shell has an anemone growing on it- this being why it gets hooked on set-lines. He also says the fishermen bring up an occasional Megasurcula carpenteriana in the same way.

Imaclava ima Bartsch- B. wrote me that he had overlooked Lowe's description of Clavus pembertoni (Trans. San Diego Soc. Nat. Hist. 8:22, pl.3,fig.6) and that the genotype of Imaclava is therefore I. pembertoni Lowe. I. ima Bartsch becomes an absolute synonym.

Lophiotoma (Polystira) nobilis (Hinds)- The C.A.S. collection contains 20 or more specimens.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
October 1944

The minutes and other publications of the Conchological Club of Southern California are not open to subscription. However, any of our friends interested in receiving them, may send us donations or stamps to help defray the cost of material and postage.

Any institution or library interested in filing these minutes is welcome to all available back issues and a place on our mailing list without charge. Students of particular problems are always welcome to ask us for specimens for study as well as all information we may have.

The next meeting will be held November 5, at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 2:30 P.M. We are now meeting the first sunday of each month.

Please mail all news about shells, shell publications, shell collectors, shell trips, localities etc. to your editor,

John Q. Burch,
4206 Halldale Ave.,
Los Angeles 37, Calif.

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The museums of the University of Michigan have lost heavily in personel engaged in the war, here and there. Now two of the outstanding men in the Museum of Zoology are leaving- Calvin Goodrich having been retired June 30th, and Dr. Carl L. Hubbs, long at the head of the Ichthyology Division of the museum, and author of many papers is leaving to become professor of biology at the Scripps Institute of Oceanography, La Jolla, California.

Dr. Henry van der Schalie will succeed Mr. Goodrich and we predict that he will do credit to the Division of Conchology.

Dr. Hubbs is perhaps the best all around zoologist recently connected with that museum, a thorough scholar and ever willing to assist the amateur.

We have not been informed of the future plans of Calvin Goodrich.

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Fred Tobleman, 13½ Brenner St.,Newark 3, New Jersey. " I received the Minutes today and I note that members are having trouble in sending specimens to Cuba. I have sent a number of packages to Senor Freire and only once did I have any trouble. Cuba has a sample post which has a limit of 18 ounces for packages at 2¢ an ounce. Keep packages under a pound if you have more than weight send two and mark " Samples" " Sea Shells". I have sent packages from New York and also Newark so marked and they reached their destination, and you do not have to obtain a consul's services. I have mounted quite a few radulae slides and if any of the members are having any difficulty if they will write to me I will be glad to help them as I am a member of the New York Microscopic Society and there different methods of mounting are discussed or cussed. "

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When our work with the pelecypods is completed it is our intention to run a final complete list of species followed by references to the pages in the Minutes where they are discussed. This should serve both as an up to date check list and as an index to our discussions.

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Lt . John E. Davis, SAAAB, Santa Ana, Calif. We are happy to welcome Lieutenant Davis to our circle of conchologists, and hope that he will be able to attend some of our meetings while stationed in southern California.

T.D.A. Cockerell, Desert Museum, Palm Springs, Calif. will be the address of Professor Cockerell from now until May, 1945 when they will return to their home in Boulder, Colorado.

Walter C. Caldwell, 2208 Massachusetts Ave., Tampa 3, Florida. is the home address of Pvt, Caldwell, and while he is at the moment stationed at the Lawson General Hospital, Atlanta, Georgia it is suggested that his friends write him at the home address.

Ralph W. Jackson, Rt. 1, Cambridge, Maryland. " Enclosed find a small rmmittance to help you with the publication of your minutes. While my interest is with land shells, I do find a host of items, especially the personals of the collectors to my interest."

Kenneth Althaus, 319 E. 110th St., Los Angeles 3, Calif. " I am working again and have the most ungodly hours, so I'm not interested in much of anything for the time being". However, Kenneth did more than a good many of the other members have done. He sent in his collecting data on certain extremely rare shells that he collected.

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The Natural History Museum Bulletin of the San Diego Society of Natural History, Oct. 1, 1944 is at hand. The following statement from the Bulletin will be of interestsince with few exceptions all of our members who have not already done so will hasten to order this publication.

" In the Society's series known as Memoirs, which is reserved for the larger, monographic type of publication, there was issued on August 30th the first section of Volume 2, with the title : " The Geology and Paleontology of the Marine Pliocene of San Diego, California (Prt 1, Geology)." The authors are Leo G. Hertlein, of the California Academy of Sciences ,and Prof. U.S. Grant,IV, of the University of California at Los Angeles, who is also a member of the Board of Directors of the San Diego Society of Natural History. Althpugh the present work will eventually be followed by additional parts relating to the paleontology of the region, the first section, now available, is a unit in itself, and is by far the most comprehensive treatise on the geology of San Diego and vicinity ever written. It represents the results of over 15 years of research and contains a wealth of information on features of the landscape interesting to the general reader, as well as the more technical facts of value to such persons as oil geologists, construction engineers, people interested in ground water problems or other students. Illustrations comprise 18 full page plates, 6 text figures and a diagram. All publications of the San Diego Society of Natural History are free to members (other than Junior members), but to avoid waste they are sent only upon request. To nonmembers the cost of the new Memoir is $1.50."

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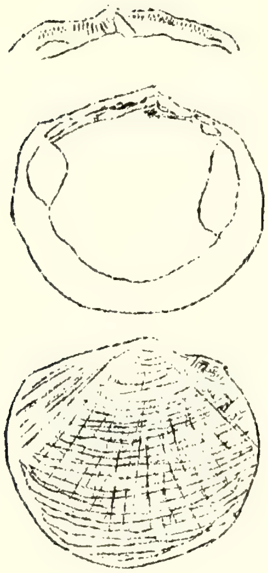
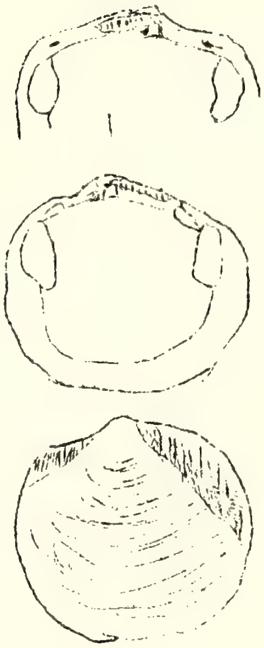
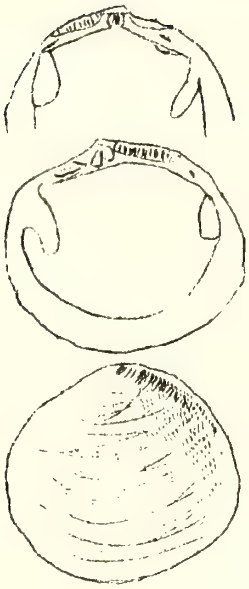
A current newspaper clipping gives an account of some nice work by the Long Beach Shell Club. " Sea Shell Display- Shells given the Agassiz Club by the late Edwin E. Hand of Long Beach and Chicago will be shown for the first time at a joint meeting of the Agassiz Club and the Shell Club at 3 P.M. Sunday in the top foyer of the Municipal Auditorium. LaVerne Hand, a daughter, will be present."



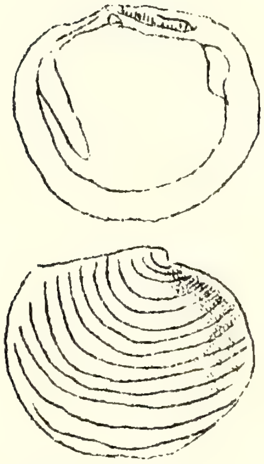
Lucinisca



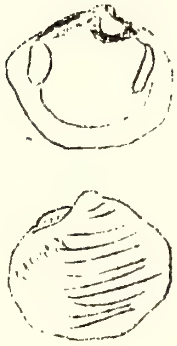
Parvilucina



Epilucina



Lucinoma



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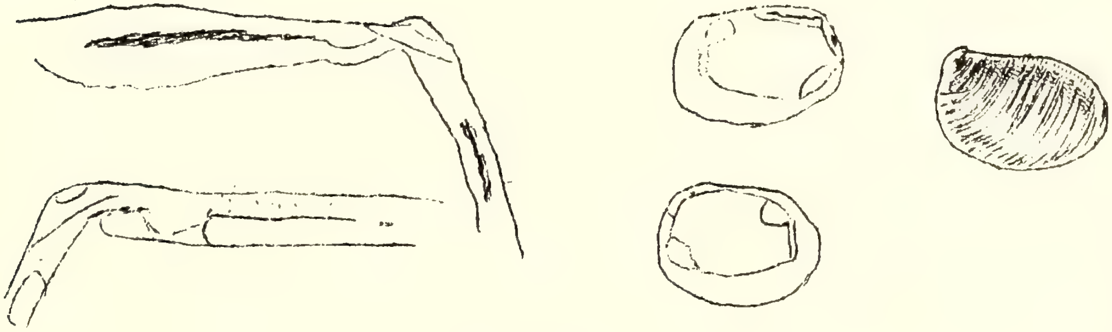
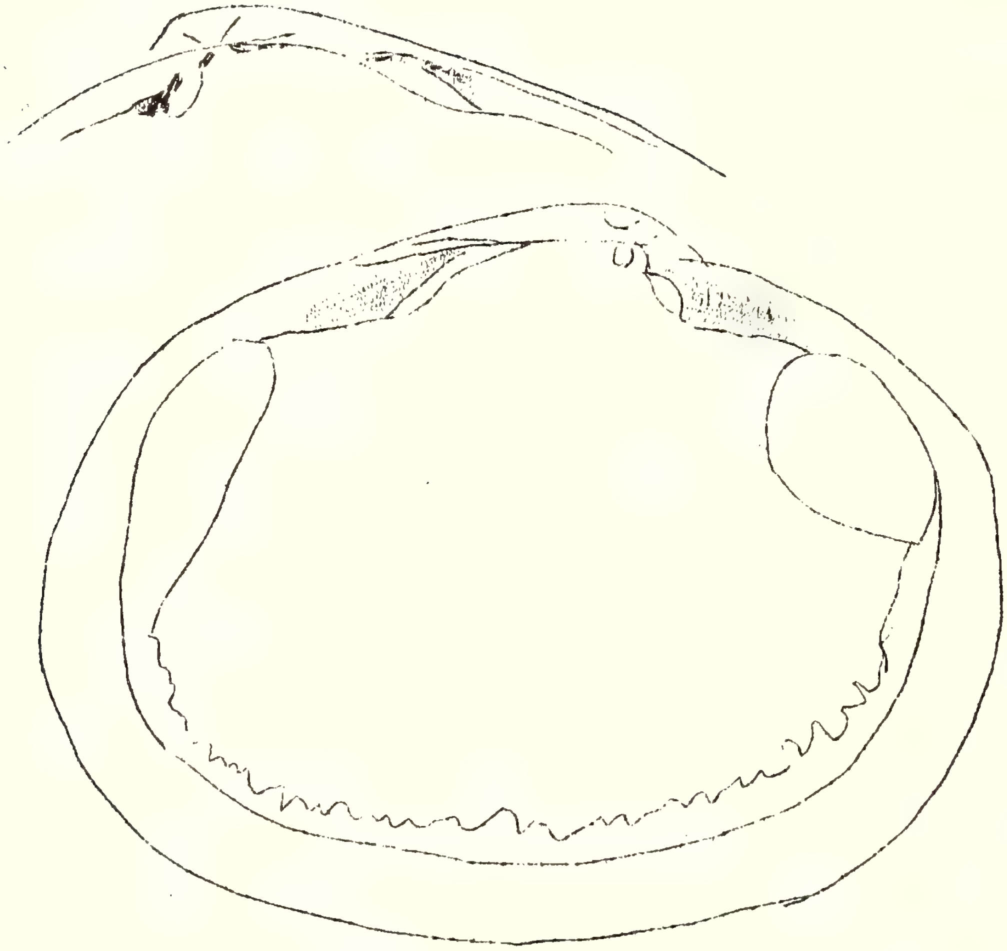
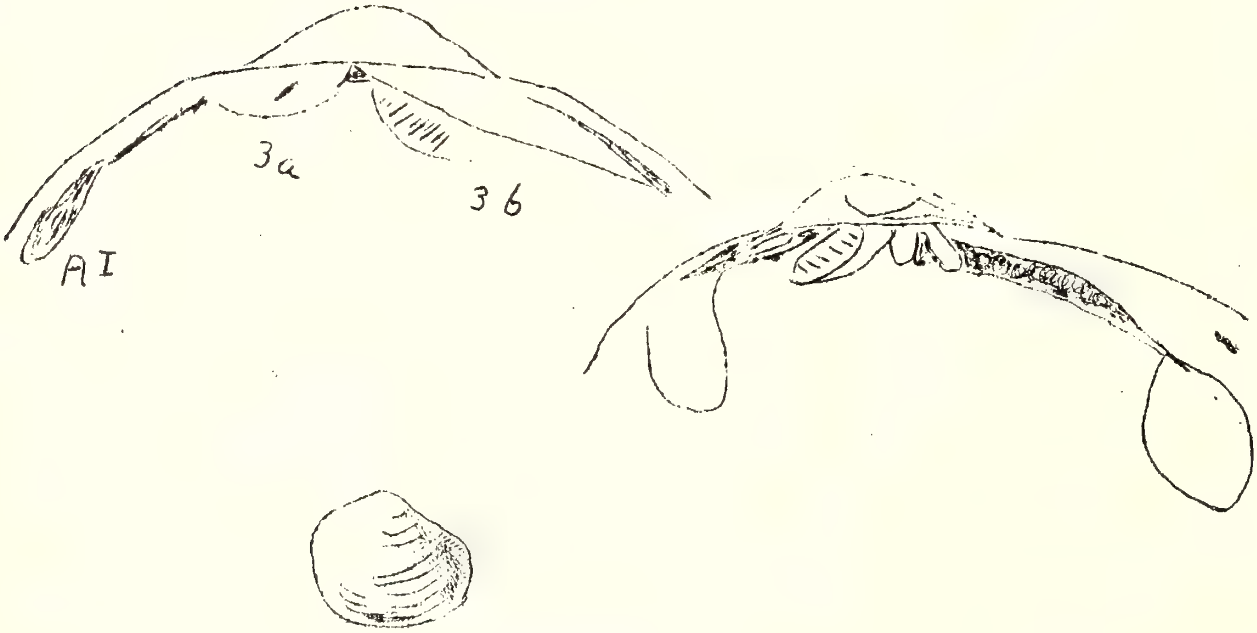


Erycina



Kellia



Lasaea

Family LUCINIDAE

Grant and Gale, 1931 called the family CODAKIIDAE following their custom of naming the families after the oldest genus in the family. This proceedure has not been followed.

Genus Lucina Bruguiere,1797. Type ?

This entire group represents another confusion of different opinions. The difficulty is that at least three types have been used by different schools and each claim to state a strong case for their designation of type. While we will outline these opinions below, for the benefit of members interested, it seems fitting that we should retain the old arrangements until some reasonable certainty can be given to a new nomenclature. Therefore, it is not to be assumed from our use of the name Lucina as genus plawing other groups as subgenera that we are not aware of the fact that some of these should and probably will be raised to generic standing. Dr. Dall in Bulletin 112 and his earlier works used the Genus Phacoides Gray,1847, having as type L. jamaicensis which is in the same section as the type of Lucina and becomes a synnnym of Lucina Bruguiere. We will therefore not use Phacoides , but pending some definite settlement of the above problem we will retain the arrangement as given in Bulletin 112.

Dr. W.H. Dall in " Synopsis of the Lucinacea", 1901, Proc. U.S.N.M., vol. 23, pp 801-2, and in " Tertiary Fauna of Florida", Trans. Wagner Free Inst. of Sci., vol. 3, pt.6, pp 1351-2, 1903, and carried on into Bulletin 112, 1921 used as the type of Lucina, Venus edentula Linnaeus.

Grant and Gale, 1931, " Pliocene and Pleistocene Mollusca of California", Memoirs of San Diego Soc. of Nat. Hist, vol.I, pp 283-4 follow a host of other authors in the use of Venus pennsylvanica Chemnitz (by subsequent designation Schumacher 1817).

Ralph B. Stewart in Special Publication No.3, Acad. Nat. Sci. Phila. , 1930, pp 175-6 designated A. alba Link *- jamaicensis Lam. as type of the subgenus Anodontia Link, which seems to more or less follow a host of authors using jamaicensis as the type of Lucina.

If the above statements seem confusing to the reader, it is not surprising since your editor is in the same position.

Dr. A. Myra Keen (personal communication, September, 1944) outlines the problem as follows:

" The problem concerning the generic name Lucina is very briefly sketched by Grant and Gale. One can advance cogent arguments for the use of any one of the three species of edentula, pennsylvanica, or jamaicensis as type. But the concept of the genus alters radically depending upon which species is accepted. So far as I can see, it is a problem that must be settled by the International Commission. We on the West Coast can avoid dealing with it by treating subgenera as genera, as Frizzel and I did in the Key. Our reason was not solely a matter of nomenclature, either, as we found one could not key out the various groups of the lucinids under a single set of characters. Confirmation of our grouping is to be found, incidentally, in the revision of the Lucinidae by Chavan, so that we adopted for our groups the nomenclature he recommends-- hence the Linga (Here) about which you inquire. The complete Chavan reference is: " Essai critique de classification des lucines", Jour. Conchyl., vol. 81, 1937, p. 133-153, 198-216, 237-282; vol. 82, 1938, pp. 59-97, 105-130, 215-243. Chavan takes, as type of Lucina, L. jamaicensis, a course that may be open to question. If the International Commission does not uphold his decision, his classification, outlined below, will have to be altered somewhat by substitutions of names. The units into which our West Coast species are allocated are, according to Chavan;

	Genus	Subgenus	Species
This would be ------- Lucina, if pennsylvanica is type.	Linga	Here	excavata
		Parvilucina	tenuisculpta,approximata
		Pleurolucina	undata (Gulf fauna)
" Phacoides" of authors	Lucina	Lucinisca	nuttallii
	Codakia	Epilucina	californica
	Lucinoma		annulata
(Lucina in Dall's class.	Anodontia		edentuloides (Gulf fauna).

For the present, I should prefer to deal with genus Epilucina rather than Codakia (Epilucina), and Parvilucina rather than Linga(Parvilucina), since it is evident from Chavan's study that we can no longer lump them all together in any single genus without obscuring obvious and important differences. "

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Subgenus Anodontia Link, 1807. Type (by subsequent designation, Dall,1901), Venus edentula Linnaeus.

" Shell inflated, thin, concentrically striated, anterior and posterior dorsal areas obsolete; lunule deep and narrow, no visible escutcheon; ligament and resilium deeply inset, but not occluded; margins entire, anterior adductor scar long, hinge wholly edentulous, shell usually large" (Dall).

Lucina (Anodontia) edentuloides Verrill,1870. " San Clemente Island to Gulf of California" (Dall). Type locality: La Paz, Lower Calif.

The consensus of opinion seems to be well stated in the following comment by Mr. Allyn G. Smith " We question Dall's record of this Gulf species from San Clemente".

Subgenus Here Gabb, 1866. Type (by desig. Stoliczka,1871), Lucina (Here) richthofeni Gabb.

" Shell having all of the usual characters of Lucina, except that the lunule is very deeply excavated, penetrating the hinge plate, and almost perforating it; bounded anteriorly by the anterior lateral tooth, and posteriorly by the cardinal tooth." (Gabb).

Lucina (Here) excavata Carpenter,1857. (Lucina (Here) richthofeni Gabb,1866) " San Pedro, California to Mazatlan, Mexico" (Grant & Gale). Type locality, Mazatlan, Mexico.

Collecting data: San Pedro in 20 fms. (G. Willett); living specimens taken in Newport Bay on the north side(where the big rocks are, upon and around which we used to find Cypraea and M. trialata) moving laboriously among broken shells and pebbbles. The habitat of the species is coarse gravel and pieces of shell. 1935 (K. Althaus); I have a fine adult but dead pair collected by T.R. Gaines at Laguna Beach in 1932 (A.G. Smith); taken living in upper Newport Bay (M. Caruthers); not uncommon in the Del Rey Baldwin Hills Pleistocene.

Subgenus Lucinisca Dall, 1901. Type(by original desig.) Lucina nassula Conrad. " Shell lentiform, white, with well marked dorsal areas, the sculpture reticulate and muricate, the right anterior cardinal obsolete." (Dall).

Lucina (Lucinisca) nuttallii Conrad, 1837. " Santa Barbara, Calif. to Mazatlan Mexico" (Dall). Keen " Abridged Check List" gives lat. 21-37 which would be an extention of range northward to Monterey, Calif.

Pilsbry and Lowe, 1932 list the typical from La Paz, but the variety centrifuga Dall from the Gulf on down to Acapulco, Mexico. If this centrifuga is but a minor form and not a valid subspecies the range would be extended to the south by the Lowe records. Dall says of centrifuga " has the concentric sculpture near the beaks sparser, more elevated and fringed with flat spinules, usually worn off.."

Collecting data: Monterey record, 15 fathoms, in sand, rare, valves only (A.G. Smith); taken living in Morro Bay, 6/36, dredged off Avalon, Catalina Island in 25 fathoms, off Redondo Beach and Santa Monica in 20-25 fathoms, taken littoral in San Diego Bay, Bird Rock. It is not an uncommon beach shell all along the coast from Long Beach south to San Onofre. It is a very abundant species in several of the Pleistocene deposits. (Burch).

Subgenus Lucinoma Dall, 1901. Type (by original designation), Lucina filosa Stimpson.

" Shell usually large, lentiform, white, with a conspicuous periostracum, concentrically lamellose or striated; the cardinal teeth developed, the inner pair usually bifid; the laterals obsolete or absent, the inner margins entire" (Dall).

Lucina (Lucinoma) annulata Reeve, 1850. " Port Althorp, Alaska to Coronado Islands" (Dall). Type locality, California.

Grant and Gale, 1931, place this species in the synonymy of the Miocene species acutilineata Conrad, 1849, stating " The supposed specific differences between the teeth of annulata and acutilineata is a delusion." However, this opinion does not seem to have been generally accepted. Keen " Abridged Check List", Dr. Joshua L. Baily Jr " West Coast Shells", and other recent authors retain the use of annulata.

Lucina (Lucinoma) annulata densilineata Dall, 1919. " Sitka, Alaska to Esteros Bay, Calif." (Dall). This subspecies by its description is based solely on the closer spacing of the concentric sculpture. It should no doubt be placed in the synonymy of typical annulata following Grant and Gale,1931.

Collecting data: Craig and Forrester Island, Alaska, 10-40 fathoms (G. Willett); Monterey record, 8-10 fathoms (Dall). Fragments dredged in 25 fms. in sand (A.G. Smith); Alki Point and Harbor Island, Seattle, Wash. (W.J. Eyerdam); we found this species a comparatively common dredged shell off Redondo Beach, Calif. and also off Catalina Island with a bathymetric range of from 25 fathoms or less down to below 75 fathoms. (Burch).

Lucina (Lucinoma) aequizonata Stearns, 1890. " Santa Barbara Islands to south latitude 38 (Chile)" (Dall). Type locality: Off Santa Barbara Islands, Calif. in 276 fathoms.

Subgenus Epilucina Dall, 1901. Type (by original designation) Lucina californica Conrad.

" Shell veneriform, convex, all the hinge teeth developed, inner margins entire; otherwise like Callucina" (Dall). Dall in Bulletin 112 used Epilucina as a section under Callucina as a subgenus. Keen " Pelecypod Key" figures Epilucina. Dr. Joshua L. Baily Jr. in West Coast Shells followed Grant and Gale on this one with Lucina (Myrtea) californica Conrad. In order to understand Dall's description of Epilucina it is necessary to read his description of Callucina (type L. radians Conrad) " Shell orbicular, dosinoid, concentrically filose and sometimes with feeble radial sculpture; the dorsal areas obsolete; the lunule small, comprised chiefly in one valve and fitting when closed into a recess in the other valve; hinge with one cardinal in each valve, the other teeth feeble or absent; inner margins crenulate."

Lucina (Epilucina) californica Conrad,1837. " Crescent City, Calif. to San Ignacio Lagoon, Lower Calif." (Dall).

Collecting data: Monterey records, shore to 40 fathoms, in sand, common, (A.G. Smith); this is our common littoral species in southern California being usually taken in rocky rubble. We have taken it in abundance from Monterey, Cayucos, Malaga Cove, San Pedro, La Jolla etc. The bathymetric range may be indicated by our dredging records, off Catalina Island in 25 fathoms, off Monterey in 20 and 40 fathoms, off Redondo Beach in 25 fathoms (Burch).

Subgenus Parvilucina Dall,1901. Type (by original designation), Lucina tenuisculpta Carpenter.

" Shell small, plump, often inoquilateral; sculpture more or less reticulate but not muricate, teeth small, but all usually present." (Dall).

Grant and Gale, 1931 say of this " The shells of this section are smaller and more convex than those of Luciniscа. This section, like some of the others, is hardly of more than specific significance".

In the preliminary discussion of this section John Burch made the following note bringing out some interesting observations " We have two species under this subgenus, tenuisculpta and approximata. Dall writes of tenuisculpta "... metropolis is in the cold waters of the northern coast", and of approximata " Closely related to the last species, but smaller, more delicate, without the anterior right cardinal tooth which is developed in the northern shell and most abundant in the Gulf of California". The difficulty is that experts have identified both forms from deep water off Redondo Beach and elsewhere, off Ensenada etc. The absence of that cardinal tooth sounds important. It may be, but if I am looking at them rightly it is possible to pick out specimens to suit either species from the same dredge haul. We may have two different species, but for the time being I am disposed to label mine all with the older name tenuisculpta Carpenter. If any of the members know a sound method of differentiation I will be glad to hear of it. " In answer to the above query Mr. George Willett made the following comment " I agree with you as to teeth, but southern specimens in my collection are much smaller, thinner, and radials more pronounced. Hence, the southern shell appears to be a geographic race, but your specimen may show differently." And on the same point Mr. A.G. Smith sent the following note " There is no doubt that the above two species are very closely related. One species name might well do for both. As we see the situation the shells from the extreme ends of the range are probably enough different to separate them. However, as they apparently intergrade, it might be sounder taxonomy to call one a subspecies of the other, if it is desired to call attention to the extreme in variation."

Lucina (Parvilucina) tenuisculpta Carpenter, 1865. " Nunivak Island, Bering Sea to the Coronado Islands, Lower Calif. " (Dall). Type locality,Vancouver Island

Collecting data: Craig and Forrester Island, Alaska (G. Willett); on the basis of USNM specimens from Monterey, Calif. as follows, 19 fms. off Watsonville Beach, in mud and fine sand (USFC Sta. 3138) (A.G. Smith); Izhut Bay, Afognak Island, Drier Bay, Knight Island, Alaska (W.J. Eyerdam); Whaling Station at Akutan Island, Aleutian Islands, 1935 (I. Norberg).

Lucina (Parvilucina) approximata Dall, 1901. " Monterey, Calif. to Panama" (Dall). Type locality, Gulf of California

Collecting data: San Pedro, 20 fms., Catalina Id., 40 fms. (G. Willett); off Monterey, Calif. in 10-70 fms., in sand and mud, common (A.G. Smith).

Genus Divaricella von Martens, 1880. Type, D. ornata Reeve.

" Valves suborbicular, subglobose, the umbones inconspicuous, the dorsal areas not indicated, the cardinals two in each valve, the ligament and resilium united, deeply inset but not strictly internal, the excavated striae forming an angle on a line radial from the beaks" (Dall).

Divaricella perparvula Dall,1901. " Monterey, Calif. (Gabb). Cape San Lucas to Ecuador" (Dall).

Grant and Gale were disposed to follow their custom of making west coast species varieties of Atlantic species whenever possible to note similarities. Of course, they may be right. They make this Divaricella dentata perparvula Dall.

Grant and Gale had another unusual opinion about Divaricella. They took it out of the family Lucinidae and placed it in Ungulinidae (Diplodontidae). They state their case on page 295.

Pilsbry and Lowe record this species from La Paz and Acapulco but it seems to be a species of the southern fauna. The Monterey record is open to such question as to make it a dispute. A note in this connection from Mr. A.G. Smith follows " Hertlein says that the Monterey record was based on specimens (or a specimen) from the Rowley Collection, in which the locality records are notoriously inaccurate. It is not in the Monterey fauna. "

Family LEPTONIDAE Gray, 1847.

There seems to be no little conflict in the proper family name for this group. Authors have been using Erycinidae Deshayes,1860, others use the name Kelliidae. Dr. A. Myra Keen (Per. Comm. Sept. 1944) advises us as follows: " As to family name: pending a revision of the whole group, apparently the best we can do is use the earliest-proposed name, which seems to be Leptonidae Gray,1847. I do not have copies of Anton or Menke, and it may well be that these or other authors cited a valid family name prior to Gray. At any rate, Erycinidae Deshayes is antedated."

" Subdivision of the superfamily is a complicated problem. Thiele, for example, places Sportella, Turtonia, and Anisodonta in the Cyamiacea, ahead of the Lucinacea and some distance from the " Erycinacea". His evidence for doing this seems plausible. He divides the " Erycinacea" into two families, " Erycinidae" and Montacutidae, the latter including Rochefortia and Montacuta with its subgenus Aligena. However, Thiele's generic nomenclature is very faulty, due to his failure to recognize genotypes. Cossman and Peyrot, " Conchologie Neogenique de l'Aquitane", tome 1,1909-12, present a classification so different I won't confuse you by copying it here. However, I enclose tracings of some of their illustrations of hinges."

In April 1941 Tom Burch read a paper before the Conchological Club on this group. The following are excerpts from some of Tom's notes and may be of some interest in connection with our present study.

" The Leptonacea form a very interesting and puzzling group. Their characters combine features which are characteristic of immaturity in other Teleodonts with characters which are more probably due to environmental modifications. Without being prototypes themselves they exhibit features which we may well suppose might have been characteristic of prototypic Teleodonts.Groups which are really starting points for numerous subsequently developed genera, are usually notable for their tendency to vary and interchange characters. In the present case perhaps the very general habit of commensalism or parasitism, has produced degeneration accompanied by a revival of atavistic primary characters. It is significant in this connection that authors have often been struck by similarity of dental features to those of immature specimens of genera of widely different origin, and have often referred species of Leptonacea to such families as the Mactridae or Cyrenidae.

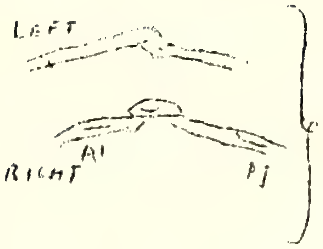
The dentition is frequently indistinctly developed, or somewhat amorphous, rendering it difficult to make out the homologies of the different parts of the hinge. It is unsafe to assume as Bernard has sometimes done, that the position of a dental lamina is sufficient to settle its homology. The dynamic reactions of the teeth upon each other are, Dall is confident, of the utmost importance in the development of the hinge. As in the vertebrate skeleton, pressure and friction in localized areas will produce directly a response in facets and buttresses. In fact, to the eye trained to take such matters into account, every hinge shows more or less evidence of the mutability of hinge structure and its responses to stress, as well as to inherited tendencies of form. In no group are these more obvious than in the Leptonacea. The prototypic hinge of the group, or that which with but slight modifications will exhibit any of the various types of hinge structhre found in the group, is very simple and has been figured by Bernard as *Pachykellya*. His researches upon the early features of the hinge have shown that among the Teleodesmacea the so-called laterals and cardinals are parts of originally simple laminae which are sharply bent at the proximal, or umbonal end, and having somewhat the form of a figure (7). In *Pachykellya* the hinge is composed of an internal resilium not obviously separated from the ligament and inclined obliquely backward as in many nepionic Teleodonts. On each side of this in each valve is a pair of the 7 shaped lamellae , of which most have developed more or less distinctly the proximal or cardinal " hook". The lower ones are less engaged in the various stresses to which the laminae are subjected in use, and therefore, as might be expected, the hook is less evident or even undeveloped.

From this type of hinge all the others can be developed by small modifications. The laminae may be long or short; when the outer limb is short we have a Λ shaped tooth; the severed hook may be modified by pressure to a petaloid shape, which may be reduced to obscure minute conical projections by degeneration as in some species of *Galeomma*. Any part or the whole of the hinge may become obsolete.

The mantle of the animal is without siphons, the water passing through incurrent and excurrent openings between the mantle lobes at the opposite ends of the body, the incurrent being anterior. If the animal is independent, it is usually very active, and crawls like a gastropod."

Key to Leptonidae- Adapted from Keen's " Key to Pelecypod Genera"

- Both cardinal and lateral teeth present.
  - Cardinal teeth 3 in one valve, 2 in other .... *Anisodonta*
  - Cardinal teeth not 3 in one valve, 2 in other
    - Cardinal teeth one in each valve ....*Erycina*
    - Cardinal teeth two in right valve
      - Shell minute, inequilateral .... *Lasaea*
      - Shell small to medium, equilateral
        - Shell unsculptures, inflated ....*Kellia*
        - Shell with minute punctations, hot inflated ....*Bornia*
- Lateral teeth absent.
  - Same number of cardinal teeth in each valve
    - Cardinal teeth two in each valve, ligament internal
      - Shell inequilateral ....*Serridens*
    - Cardinal teeth one in each valve
      - Outline quadrangular or trapezoidal ....*Pseudopythina*
      - Outline suborbicular ....*Aligena*
  - Fewer cardinal teeth in one valve than in other
    - Cardinal teeth 3 in one valve, 2 in other, minute .....*Turtonia*
    - Cardinal teeth not 3 in one valve, 2 in other
      - Cardinal teeth absent in one valve ....*Rochefortia*
      - Cardinal teeth present in both valves
        - Outline quadrangular; beaks nearer posterior end ...*Sportella*
        - Outline not quadrangular; beaks subcentral ....*Lepton.*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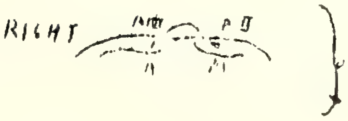
Erycina pellucida Lam. Eocene
from Cossman and Peyrot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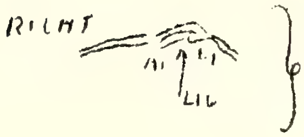
Lepton squamosum Mtg.
from Cossman and Peyrot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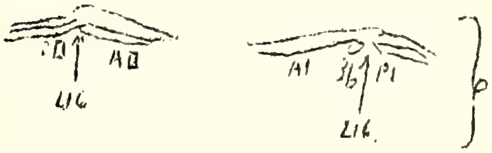
Montacuta substriata Mtg.
from Cossman and Peyrot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LIG
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3b
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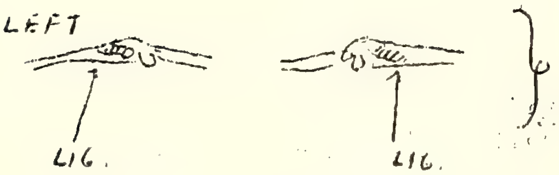
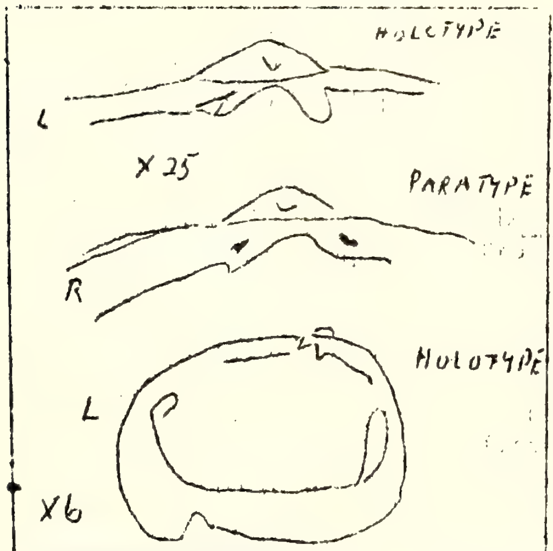
LIG.

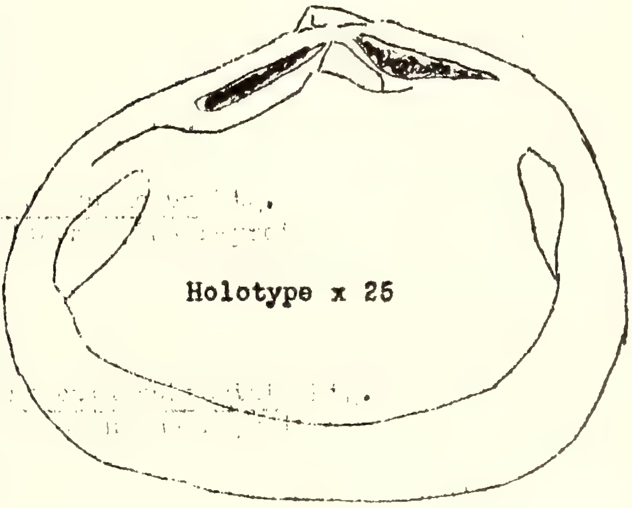
Rochefortia bidentata Mtg.
ibid


LEFT
LIG.
LIG.

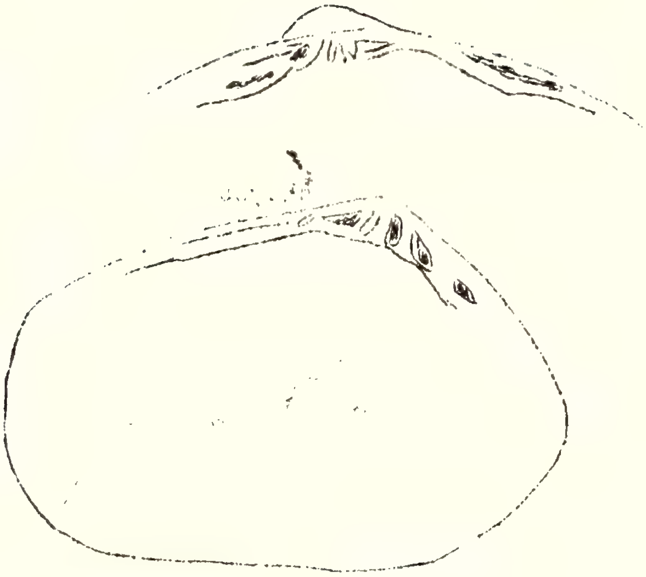
Sportella dubia Deshayes
ibid


HOLOTYPE
L
X 25
PARATYPE
R
HOLOTYPE
L
X6

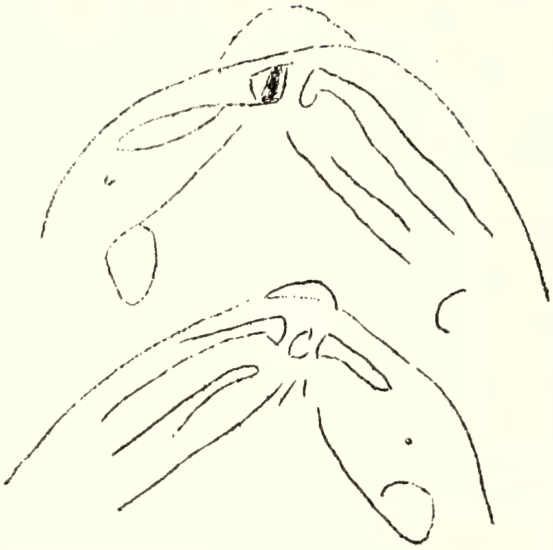
Erycina bakeri Dall
Pseudopythina


L
Holotype x 25

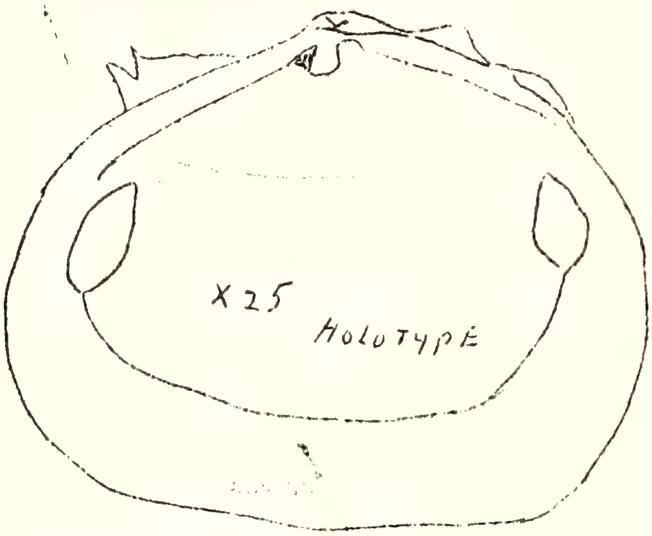
Erycina balliana Dall
Montacuta



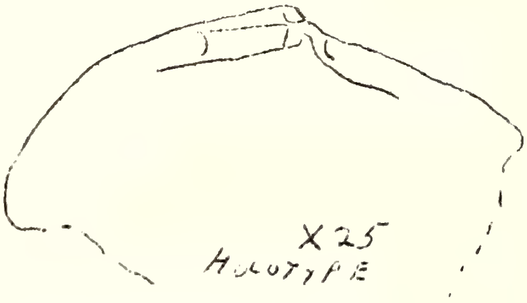
Anisodonta



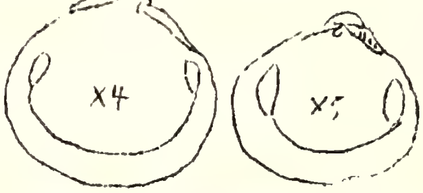
Pachykellya


X 25
HOLOTYPE

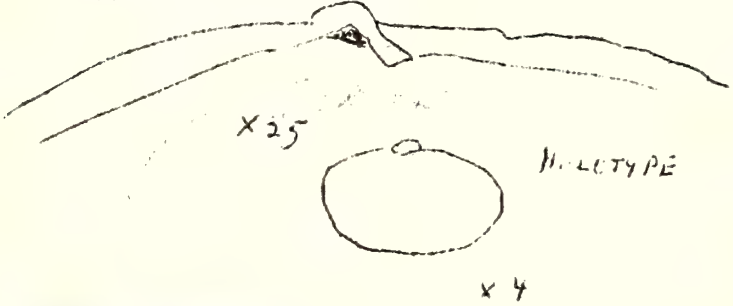
Erycina coronata Dall


X 25
HOLOTYPE

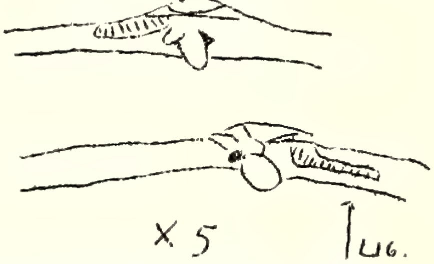
Lepton meroeum Carpenter



Aligena aequata (Conrad)
from Dall,1895.


X 25
HOLOTYPE
X 4

Erycina chacei Dall
Pseudopythina



Sportella- Sketch of hinge from
Eocene specimen.

Genus Erycina Lamarck, 1805. Type (by subsequent designation Stoliczka, 1871), Erycina pellucida Lamarck.

" Shell equivalve, subinequilateral, usually transversely oval. Hinge with 1 or 2 unequal, minute, diverging cardinals and two laterals in each valve, the latter sometimes double in the right valve. Resilium oblique, behind the beaks."

" In all these forms, whether the shorter end be anterior or posterior its adductor scar will be more rounded and often larger than the scar at the longer end of the shell, a result brought about in all probability by the dynamics of the situation." (Dall).

Six species of Erycina have been described from this coast, all of them by Dall and all in the same publication (Proc. U.S.N.M. Vol.52, pp. 409-10). All six of them are from southern California and the original paper contained no figures.

Dr. A. Myra Keen (Personal Comm. Sept., 1944) states " When at the National Museum I made camera lucida drawings of the six " Erycina" described by Dall in 1916. Later the National Museum kindly furnished photographs of several of them; at that time Dr. Rehder commented that none seemed to be true Erycina, in which opinion I concur. I enclose tracings of my drawings of the hinges. From these and notes I took, I would make the following allocations:

Erycina bakeri Dall,1916 is questionably a Pseudopythina. The ventral margin has a peculiar sinus, reflected on the outer surface as squamous scales. If this were a constant feature, it should merit a new genus, but I suspect injury to the mantle of the individual.

Erycina balliana Dall, 1916 seems to be a Montacuta,the first to be recorded on our coast,

Erycina catalinae Dall, 1916 is a Lasaea. The holotype is broken and worn; it looks like L. cistula but could be L. subviridis. I prefer to regard it as a synonym of the latter, for I would be reluctant to throw L. cistula founded upon an entire specimen, into the synonymy of catalinae with a defective holotype.

Erycina chacei Dall,1916 is a Pseudopythina .

Erycina coronata Dall, 1916 with its peculiar dorsal spines, probably should be type of a new genus. The hinge does not match any of our other forms.

Erycina santarosae Dall, 1916 remains in doubt, as no hinge is available. "

Genus Kellia Turton,1822. Type(by subsequent designation, Recluz 1844), Kellia suborbicularis (Montagu).

Grant and Gale 1931 stated that the use of Kellia is inadmissable , inasmuch as Hermannson in 1846 selected Cardium rubrum Montague as type. They have, however, overlooked the earlier designation of type by Recluz in 1844, who, in his account of Erycina, refers to Turton's genus Kellia, mentioning " Le type de son Kellia,celui seul qui correspond au charactere de son genre le Kellia suborbicularis". (Revue Zool, Cuv. v.7, p. 295) (Winckworth, Journal Conchology 20:52, 1934).

" Shell small to medium, equilateral, shell unsculptured, inflated. The shell is rounded and inflated, concentrically striate or smooth; with an obsolete amphidetic external ligament and a large strong internal resilium, without a lithodesma. In its fullest development the hinge has 2 anterior and 2 posterior teeth in each valve, of which the anterior ones are shorter and usually regarded as cardinals, which may be concrescent at their umbonal ends, forming an Λ shaped tooth, or may be free and pustular; The valves are frequently distorted through the effect of the nestling habit. The species retain the young between the valves until fairly well grown, and the young are much more compressed than the adult shells. In many species the dental formula is not fully represented by developed teeth."(Cotton & Godfrey,1938).

Kellia laperousii Deshayes, 1839. Bering Sea, the Aleutians and south to Panama.

An interesting note regarding this species is one made by MacGinitie, 1935 " There is but one siphon, which is incurrent, a nd the opening posterior to the foot is used as an excurrent siphon". The question is this. The Leptonidae are not supposed to have siphons. Do they?

Grant and Gale, 1931 considered laperousii a variety of suborbicularis . It may be but we are disposed to rather prefer to consider laperousii the west coast species and state that our west coast specimens labelled suborbicularis , an English species, are but young specimens of laperousii. In the preliminary discussion of this matter Dr. A. Myra Keen (Personal Comm., Sept. 1944) stated " I am in accord with you on the Kellia suborbicularis, as I have never been sure of more than one species. None of the specimens in our collection are as orbicular or high as our lone topotypic specimen of K. suborbicularis. If a separation can be made among our West Coast material, the name K. chironii is available (See Carpenter, 1864, p. 643); also, there is K. rotundata Carpenter, same reference. The southernmost range of laperousii is San Martin Island (lat.30), Fred Baker coll."

Collecting data: It would be a waste of paper to list localities in the range when an examination of almost any wharf pile, Chama bed, Mytilus bed etc. will yield great numbers of specimens. It is interesting to note that specimens from the northern end of the range average much larger. The bathymetric range is a matter of some interest . The species is not uncommon off Redondo Beach in the gravel down to 25 fathoms. Our deepest r ecord is 35 fathoms off San Pedro, Calif. (Burch).

Genus Rochefortia Velain 1876 . Type (by monotypy), Rochefortia australis Velain.

Cardinal teeth not 3 in one valve, 2 in other- Cardinal teeth absent in one valve.

" Right valve with 2 diverging cardinals, the resilium between them, and two laterals; left valve with 2 simple laterals." (Suter). " Shell small, ovate or rounded quadrate, anterior end longer; hinge with a short internal resilium below the umbones and traces of an obsolete external ligament. On either side of the resilium the cardinal margin bears a simple oblique lamina, the pair divaricating from the umbo and without any hook at the proximal ends. They are separated usually in one valve from the dorsal margin by a groove parallel to it, and above this groove the margin in some cases is thickened so as to form another lamina; the single lamina of the opposite valve , sometimes represented only by the inflected and beveled extentions of the valve margin, are received into the grooves above the laminaeof the first mentioned valve, and the right anterior lamina is longer than the right posterior one. From Bernard's researches into the development of the hinge it is evident that these laminae represent the secondary laminae of such forms as the Veneridae before the latter break up into cardinal and lateral teeth properly so called. But in rare instances the laminae of the present group begin to show signs of a tendency to separate, so that the distal portions are more elevated than the medial part, and the former might be talen for laterals and the proximal ends for obscure cardinals, which in a generic sense they really are. The ventral portion of the resilium carries a lithodesma." (Dall).

The shell is ovate or rounded triangular, with an adherent, usually polished periostracum. The individuals are either free , domiciliary in the burrows of crustaceans or commensal on crustaceans.

Dr. A. Myra Keen advises " There is a question as to the exact date of Velain's report; it may have been 1877. Mysella Angas apparently was published in the same year. Rochefortia apparently has priority.

Rochefortia tumida Carpenter, 1864. " Shumagin Islands, Alaska to San Diego" (Dall) to " Scammons Lagoon, Lower Calif. " (Eric Jordan).

Collecting data: Forrester Island, Alaska (G. Willett); off Redondo Beach, Calif. in 25 fathoms ,gravel 4/38 (Burch).

Rochefortia planata Dall, 1885. " Icy Cape, Arctic Ocean, south to the Shumagin Islands, Alaska" (Dall).

Rochefortia ferruginosa Dall, 1916. " San Francisco Bay to Santa Rosa Island, Calif." (Dall). Type locality, San Francisco Bay.

Rochefortia beringensis Dall,1916. " Bering Island, Bering Sea" (Dall).

Rochefortia grebnitzskii Dall, 1916. " Bering Island, Bering Sea" (Dall).

Rochefortia aleutica Dall, 1899. " Bering Sea to Coronado Islands" (Dall).

Collecting data: Southeast Alaska, San Pedro,Calif. and the Los Coronados (G. Willett); off Redondo Beach in 75 fathoms mud 8/38, off Monterey, Calif. in 10 fathoms, shale bottom (Burch).

Rochefortia compressa Dall, 1911. " Shumagin Islands, Alaska to Gulf of California" (Dall).

Rochefortia pedroana Dall, 1899. " San Pedro, Calif. to Morro Bay, Calif. (Burch). Discussed in connection with the following species.

Rochefortia golischi Dall, 1916. " Off Santa Rosa Islands, Calif." (Dall)

Rochefortia grippi Dall,1912. " San Diego, Calif." (Dall).

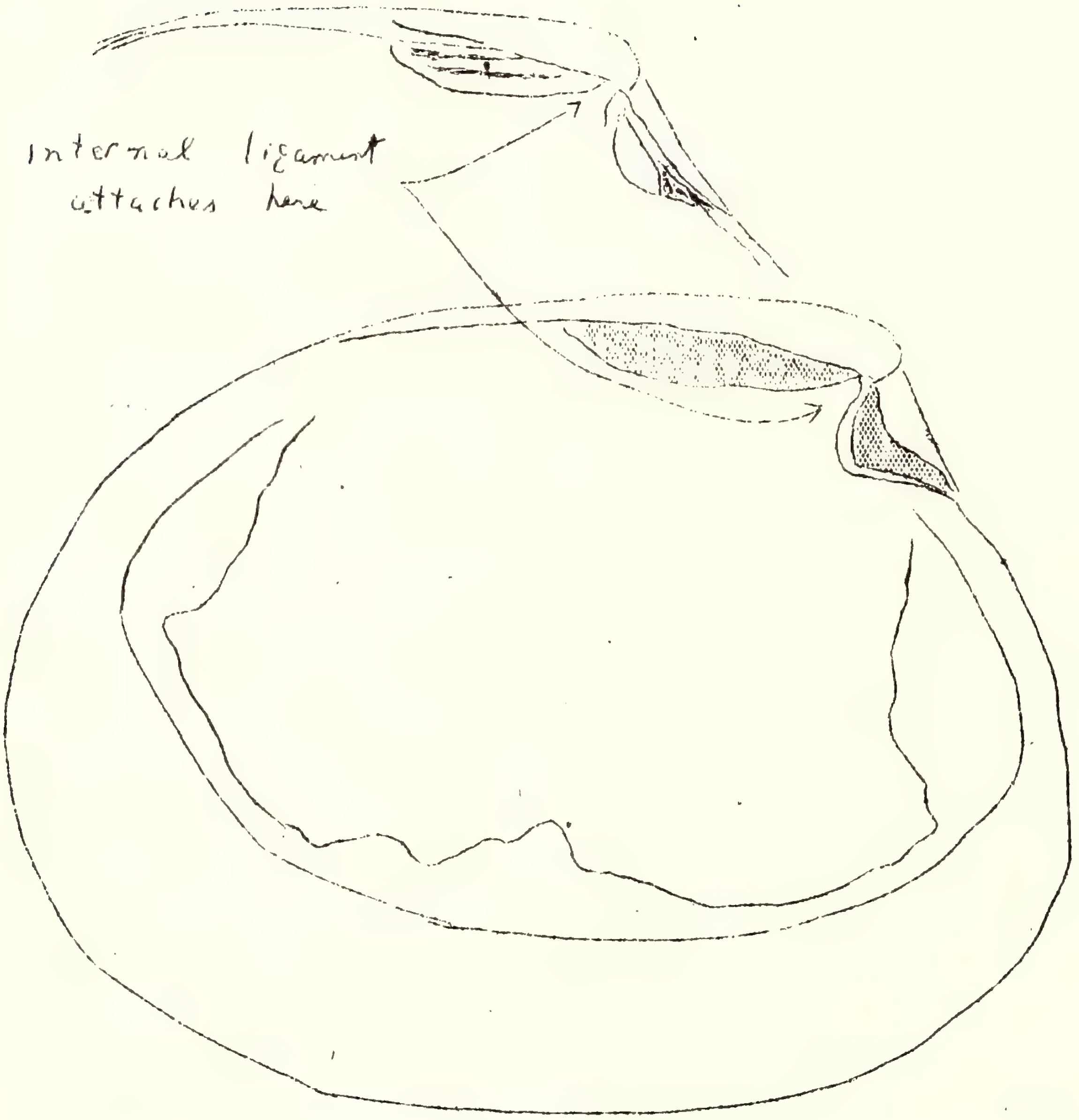
This is a discussion of the species of Rochefortia figured on the next page. This species is very common commensal on the large sand crab, Blepharopoda occidentalis. We have taken it from this crustacean at Morro Bay, Hermosa Beach, Venice etc. The mollusks are either fastened to the hairs of the legs and underparts, or more common among the gills under the carapace. Many of us labelled this species Rochefortia pedroana Dall until we were advised by Dr. A. Myra Keen that in her opinion the species is Rochefortia golischi Dall. Dr. Keen very generously sent us photographs of the type. This caused a great deal of study and discussion. Mr. George Willett made the following comments " If Dr. Keen compared our shells with the type of golischi and found them identical, that would seem to settle its identity, but I am unable to explain the apparent discrepancy in the descriptions. Particularly pertinent parts of the descriptions are as follows:

R. golischi- white; surface polished, minutely concentrically wrinkled. Anterior end short.

R. pedroana- white, with concentrically rugose pale-brownish epidermis. Posterior end short.

Thomas A. Burch, who drew the following figure made these comments about the matter " Rochefortia pedroana Dall is described as having a brown wrinkled epidermis while R. golischi is described as having a shiny white shell with wrinkles. Our shells have a shiny white shell with wrinkles covered with a brown periostracum with wrinkles. Therefore, I believe that in 1899 Dall described a live shell and that in 1916 he described a dead shell. It also seems probable to me that Dall got his wires crossed when he called the short end posterior on one species and anterior on the other species. I do'nt know which end actually is anterior and posterior but I'll bet that the short end is on the same end in both species. If this be true the correct name is Rochefortia pedroana Dall since it was described 17 years earlier than R. golischi."

The identity of this species therefore remains a subject of debate.



Rochefortia pedroana Dall, 1899.
Venice, Calif. 8/1937 on *Blepharopoda occidentalis*.

Genus *Serridens* Dall, 1899. Type, *Phistiphora oblonga* Carpenter
Lateral teeth absent, same number of cardinal teeth in each valve, cardinal teeth two in each valve, ligament external, shell inequilateral. *Serridens oblonga* Carpenter, 1864. Monterey, Calif. (Chace) to San Hipolito Point, Lower Calif. (Eric Jordan). Dall gave the range San Pedro to Coronado Islands. Dr. A. Myra Keen " Abridged Check List" noted the range down to San Hipolito Point. Our members here extend the range northward, the Chaces to Monterey, Morris E. Caruthers took the species at San Simeon, Calif.

The species is found commensal with both *Ischnochiton conspicuous* Carp. and I. magdalensis Hinds, especially large chitons in such a situation that they are inactive. The mollusks are found under the mantle, among the gills, and also on the bottom of the foot.

Genus Pseudopythina Fischer, 1884. Type Kellia MacAndrewi Fischer, 1867. Cardinal teeth one in each valve, outline quadrangular or trapezoidal.

" Shell rather large for the family, reniform, with a coarse rugose periostracum; hinge with two projections of the right dorsal margin fitting into sulci of the opposite valve, one right and one left cardinal, a strong internal resilium, sometimes with a lithodesma, and an evident but small external ligament; laminae absent or not distinct." (Dall).

Species of Pseudopythina are usually found commensal on crustaceans. It is the belief of MacGinitie that these mollusks attach and detach themselves at will.

Pseudopythina rugifera Carpenter, 1864. " Commensal with Gebia. Puget Sound" (Dall). Craig, Alaska (G. Willett) to San Bartholome, Lower California (G. Willett).

The species is found also attached to the foot of the sea mouse, Aphrodite.

Collecting data: off Orcas Island, Puget Sound 10-30 fms. (Dr. Fred Baker); Craig, Alaska and San Bartholome, Lower Calif. (G. Willett).

Note by Mr. George Willett " If my understanding of these species is correct (rugifera and compressa), Oldroyd has the illustrations reversed." And a note from Dr. A. Myra Keen " The figure of P. compressa in Mrs . Oldroyds Marine Shells, vol. 1, pl. 11, fig. 11 is of P. rugifera. Of the figures Mrs. Oldroyd gives of P. rugifera, pl. 15, fig. 9 is identical with pl. 38, fig.8; we have the specimens in our type collection. They are more tumid than P. compressa and of a slightly different outline; I believe they are P. rugifera. The figure in pl. 38, fig.9 is copied from Dall, Proc. U.S.N.M., v. 21, pl. 87, fig.4. "

Pseudopythina compressa Dall, 1899. " Cape Lisburne, Arctic Ocean, to Acapulco" Commensal on crustaceans" (Dall). Type locality, Bering Sea , south of Nunivak Island, in 4-28 fathoms.

Collecting data: Craig, Alaska 20-40 fathoms (G. Willett);

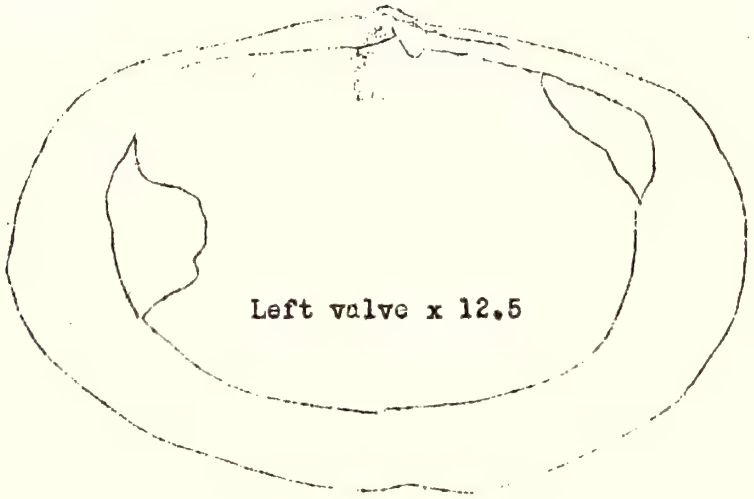
Pseudopythina myaciformis Dall, 1916. " Commensal with crustaceans. Puget Sound" (Dall).

Dr. A. Myra Keen (Per. Comm. Sept. 1944) " I have a photograph of the holotype of P. myaciformis, furnished by the National Museum. The posterior end seems to be more attenuated than in other Pseudopythinas. "

Pseudopythina bakeri (Dall), 1916. " Off south Coronado Island, L.C."(Dall). See discussion of Erycina bakeri Dall on page 13.

Pseudopythina chacei (Dall), 1916. Described as Erycina chacei Dall, 1916 (Proc. U.S.N.M. vol. 52, p. 410). " Santa Rosa Island to Coronado Islands" (Dall).

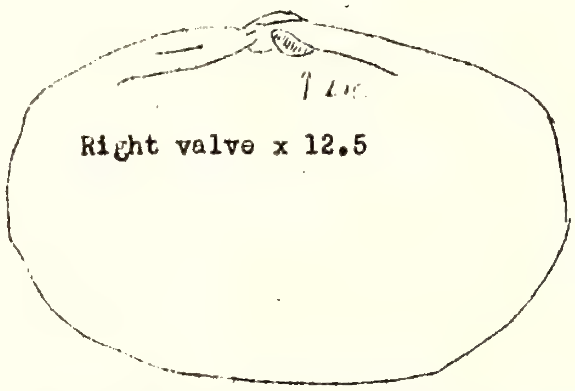
In August, 1939 the Burches dredged certain specimens off Redondo Beach, Calif. in 75 fathoms, mud bottom which had not been classified to species. These were recently sent to Dr. A. Myra Keen for identification. The following report was returned with the specimens " The packet of leptonids arrived this morning. You have one real find-- two specimens of " Erycina chacei", one with both valves intact. I took my life in my hands and opened the latter specimen, although one valve was already broken and looked ready to crumble. By coating it with a thin solution of ambroid I was able to keep it together and thus was able to see for the first time the other side of the hinge. The holotype, of which I sent you a camera lucida drawing, was said by Dall to be a right valve, but your specimen, with ligament in place, shows it to be a left valve instead. Below are camera lucida drawings of your larger specimen (a left valve very like the holotype except it is larger, 8 x 5 mm, as opposed to 5.3 x 3.5) and of the right valve of the smaller specimen. After comparison with the genotype of Pseudopythina , P. macandrewi, as well as with other possibilities , I have come to the conclusion that Dr. Dall's second hunch was correct and that this does turn out to be a Pseudopythina (see Proc. U.S. Nat. Mus. vol. 52, p. 410). The species is close to P. compressa but differs in smaller size, greater proportionate length, and more nearly equilateral outline. I am delighted to have had a crack at the re-allocation of *Erycina chacei.* "



Left valve x 12.5

Pseudopythina chacei (Dall)

75 fms. off Redondo Beach



Right valve x 12.5

Genus *Bornia* Philippi, 1836. Type (by subsequent desig. Stoliczka,1871), *Bornia corbuloides* Philippi.

Shell with minute punctations, not inflated.

" Shell ovate or subtrigonal, subequilateral, with a more or less flattened disk, the periostracum usually brilliant, the surface smooth or divaricately more or less plicate; an obsolete amphidetic external ligament present, a short, slightly posterior, subumbonal internal resilium without a lithodesma, the pallial line not sinuated, and the pallial area frequently punctate or radially striate; hinge with one moderately long posterior and two shorter anterior laminae in the left valve, and in the right one anterior and one longer, sometimes remote, posterior lamina; one or both the anterior laminae in either valve may have the aspect of cardinals; hinge-plate usually excavated." (Dall ,1900).

Bornia retifera Dall,1899. " Monterey to Santa Barbara Islands, Calif."(Dall *Type locality,* off Santa Rosa Island in 13 fathoms.

The microscopic sculpture distinctly separates it from any other American species. The surface is polished, with faint incremental lines and minute close punctations whose interspaces give the effect of a fine netting.

Collecting data: Mugu, Ventura Co., Malaga Cove, L.A. Co., and in the Del Rey Pleistocene deposits (G. Willett).

Genus Lepton Turton, 1822. Type. Solen squamosus Montagu.
Outline not quadrangular- Beaks subcentral.

" Shell orbicular, compressed, smooth or shagreened, a little opened at the ends and longest behind; right valve with or without one cardinal tooth and with two laterals or only one; left valve with one cardinal and one or two laterals" (Cotton and Godfrey, 1938).

Lepton meroeum Carpenter, 1864. See figure on page 12. " San Diego, Calif." (Dall). " San Pedro to San Diego" (Oldroyd). Keen " Abridged Check List" gives lat. 33-48 which would take the northern end of the range on up to Puget Sound.

Dr. A. Myra Keen (Per. Comm. Sept. 1944) advises " The Puget Sound record of Lepton meroeum was based on a specimen in the Fred Baker collection identified at the National Museum, probably by Dr. Dall. It seems to agree with the holotype, but I doubt if the allocation to Lepton is correct. I am not prepared, however, to suggest a better one. Perhaps we should put the generic name in quotation marks to indicate uncertainty."

Genus Lasaea Brown, 1827. Type (by monotypy), Lasaea rubra (Montagu) -- Cardium rubrum Montagu, 1803.
Reference- Keen, 1938, Proc. Malac. Soc., vol. 23, pp 18-30.
Cardinal teeth two in right valve- shell minute, inequilateral.

" Shell inequilateral, anterior end longer. Right valve with one pustular cardinal and one pair of laminae on each side; left valve with one cardinal and two laminae diverging from the umbo" (Suter).

The species of Lasaea are nestlers, adhering by a byssus to the rugosities of calcarious algae, barnacles etc. They are abundant in many of the Mytilus beds. Lasaea rubra (Montagu) 1804 is the type species and for a long time was thought to have been carried all over the world on the bottoms of ships from Europe. This theory received a disastrous setback, however, when it was discovered that Lasaea occured in the fossil deposits on some of our west coast islands. Even so it was still considered to have a world wide range with a variety subviridis occuring on the west coast of north America.

Lasaea cistula Keen, 1938. Proc. Mal. Soc. vol. 23, pp.25-26, pl.2, figs 7-9. Point Arena, Calif. (Keen) to Ensenada, Mexico (Burch).

Description by Keen " Shell minute, quadrate, ventricose, especially above the horizontal mid-line, greatest dimension parallel to dorsal margin and to a line joining the muscle-scars; beaks at the posterior 2/5, umbones tending to be squarish, conspicuous, more than 1/10 the height of the shell; anterior margin joining dorsal at an angle (often a right angle) , not sloping immediately downward from the beaks; colour usually medium to dark carmine-red, (not brownish red as in true rubra), occasionally white; surface, as in subviridis, sculptured by concentric growth-constrictions and minute, wavy, concentric striae resembling, especially near the margins, the irregular grooves and ridges of the skin of the human hand; hinge heavy for the size of the shell, consisting of, in the right valve, a lamellar anterior lateral and nymph, an excavated pit into which a cardinal of the left valve fits, and a lamellar posterior cardinal above a deep, transverse resilium; hinge of left valve with two lamellar laterals which engage the single lateral of the right valve, a thorn like cardinal, and a small lamellar posterior lateral; muscle scars two, pallial line simple" Holotype- Length 1.8 mm, Ht. 1.6, Thickness 1.2 mm. Discussion.-- " Although an occasional specimen of L. cistula may attain the size of 3.0 mm., the usual size is only about two-thirds of that of subviridis. Proportionately, cistula is consistently higher than subviridis and true rubra; it also is markedly ventricose, which fact, together with its frequently squarish outline, has suggested the name, a Latin noun, feminine in gender, meaning " little box". Like subviridis this species is distinguished from other Lasaea by the wavy-wrinkled concentric sculpture. "

Collecting data: Mytilus beds at Playa del Rey, Los Angeles Co., Calif. 1938 and 5 miles north of Ensenada,Mex. (Burch); Malibu and Laguna, Calif. 1917 (H. N. Lowe); Mission Bay (bridge), Calif. (Emerson, 1943); Ensenada Mexico on Balanus (MacLean 1941).

Type locality: Moss Beach, Half Moon Bay, Calif.

Lasaea subviridis Dall, 1899. (Lasaea rubra subviridis Dall, ex Carpenter MS, Proc. U.S.N.M., vol. 21, no. 1177, p. 881). The original description is " (L. rubra), variety subviridis Carpenter, is pale greenish yellow. It is reported from Lower California". Redescription by Keen " Shell minute, inequilateral (anterior end longer), oblique, rather flat, greatest dimension parallel to postero-dorsal margin, but not parallel to a line joining the muscle-scars, beaks at posterior 2/5 , umbones low (usually less than 1/10 the height of the shell); junction of anterior and ventral margins somewhat attenuated , ventral margin rounded, joining posterior in a smooth curve; colour greenish or yellowish grey, suffused with pink at the beaks, the colour sometimes extending down into the ventral half of the shell, hinge tinged with pink; surface sculptured by irregular growth constrictions and minute , wavy concentric striae, especially near the ventral margins; hinge of right valve with a lamellar (sometimes bifid) anterior lateral and nymph, a deep cardinal pit, and a lamellar posterior cardinal above the long, oblique resilium, hinge of left valve with two lamellar anterior laterals receiving the single lateral of the right valve, a thorn like cardinal, and a small lamellar posterior lateral."

Type locality.- " Lower California". Neotype from San Martin Island, Lower Cal.

The above descriptions are included because the Proc. Mal. Soc. of London are not readily available to many of the members.

Dr. Keen gives the range in " Abridged Check List" lat 30-40. This should be from about Humboldt County, Calif. to the tip of Lower California.

Collecting data: Monterey, San Pedro, Santa Monica, Playa del Rey, Dana Point, La Jolla, Punta Banda, Lower Calif. (Burch); Government jetty, North Island, Calif. (Kate Stephens, 1907).

Genus Turtonia Alder, 1848. Type. Venus minuta Fabricius.
Fewer cardinal teeth in one valve than in other- cardinal teeth 3 in one valve 2 in other.

" Shell ovate, smooth, closed, with an elongated external combined resilium and ligament; margins entire; hinge with, in the right valve, two stout cardinals, prolonged into slightly prominent laminae anteriorly, in the left valve one stout and one slender arched laminar cardinal and an obscure lateral lamina entering a sulcus in the opposite valve; pallial line distinct, not sinuate, adductor scars ovate, distinct, surmounted by a smaller pedal scar from the retractors" (Dall, 1900).

Turtonia minuta Fabricius, 1780. " Bering Strait and south to Magdalena Bay, Lower Calif." (Dall) . Type locality, Greenland. Johnson gaves Atlantic range " Greenland to Massachusetts".

Collecting data: Friday Harbor,Wash. Ginsberg. (G. Willett); Crescent City, Calif. (Chace); Rodman Bay, Peril Strs. , Alaska,(Kate Stephens); Elrington Island, Pr. Wm. Sound, on nullipores (W.J. Eyerdam).

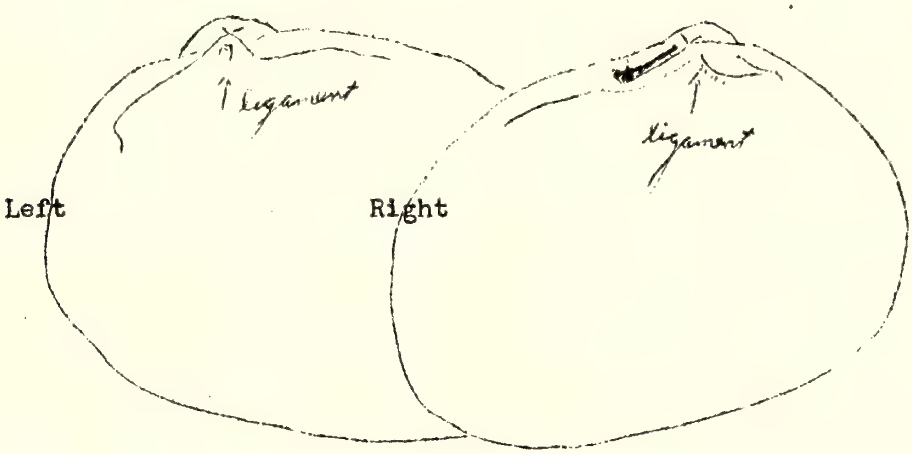
Turtonia occidentalis Dall,1871. " Plover Bay, Bering Sea" (Dall). Keen " Abridged Check List" gives lat. 55-60. Dr. A. Myra Keen advises on this " We have specimens I identify as Turtonia occidentalis from Rodman Bay, Alaska."

Genus Montacuta Turton, 1822. Type, Montacuta substriata Montagu.

" Shell small, more or less transversely ovate, posterior end usually shorter; anterior part of the hinge provided, in the right valve, with a narrow lamina having a minute cardinal hook at the proximal end; the left valve with a similar lamina on which the hook is less prominent or even absent; external ligament obsolete, amphidetic, leaving no traces on the shell; resilium strong, internal, posterior, seated on nymphs of which the right one is usually less strong; the ventral surface of the resilium, in the larger species, with a thin calcareous deposit, often wholly absent and never forming a developed lithodesma; the distal portions of the laminae sometimes obsolete."

Montacuta balliana (Dall), 1916. Described as Erycina balliana Dall . See figure on page 11. " Off South Coronado Island, Lower Calif." (Dall).

In allocating this species to Montacuta Dr. A. Myra Keen comments that it is the first to be recorded from this coast.



Montacuta substriata (Montagu)
Camera lucida drawing of a specimen in the Stanford Collection from Plymouth, England by Dr. A. Myra Keen.

Genus Aligena H.C. Lea, 1843. Type, Aligena striata H.C.Lea,1845 (by subsequent designation, Dall, 1900) -- A. aequata (Conrad), 1843.

References: Lea, H.C., Proc. Amer. Phil. Soc., vol.3, p. 163,1843 (Sept.); Trans. Amer. Phil. Soc., Ser.2, vol.9, p. 238,1845. Dall, Trans. Wagner Free Inst. Sci. vol.3, pt. 5, p. 1175, 1900. Amphidesma aequata Conrad, Proc. Phila. Acad. Sci. vol.1, p. 307, 1843 (Oct.). Aligena aequata (Conrad), Dall, Trans. Wagner Free Inst. Sci. vol. 3, pt. 3, p. 919, pl. 24, 1895; ibid vol.3, pt. 5, p. 1175, 1900.

Burch, Tom, " A Survey of the West American Aligenas with a Description of a New Species", Nautilus, vol.55, pp.48-51, pl.4, figs. 5,6,7, 1941, (Oct.)

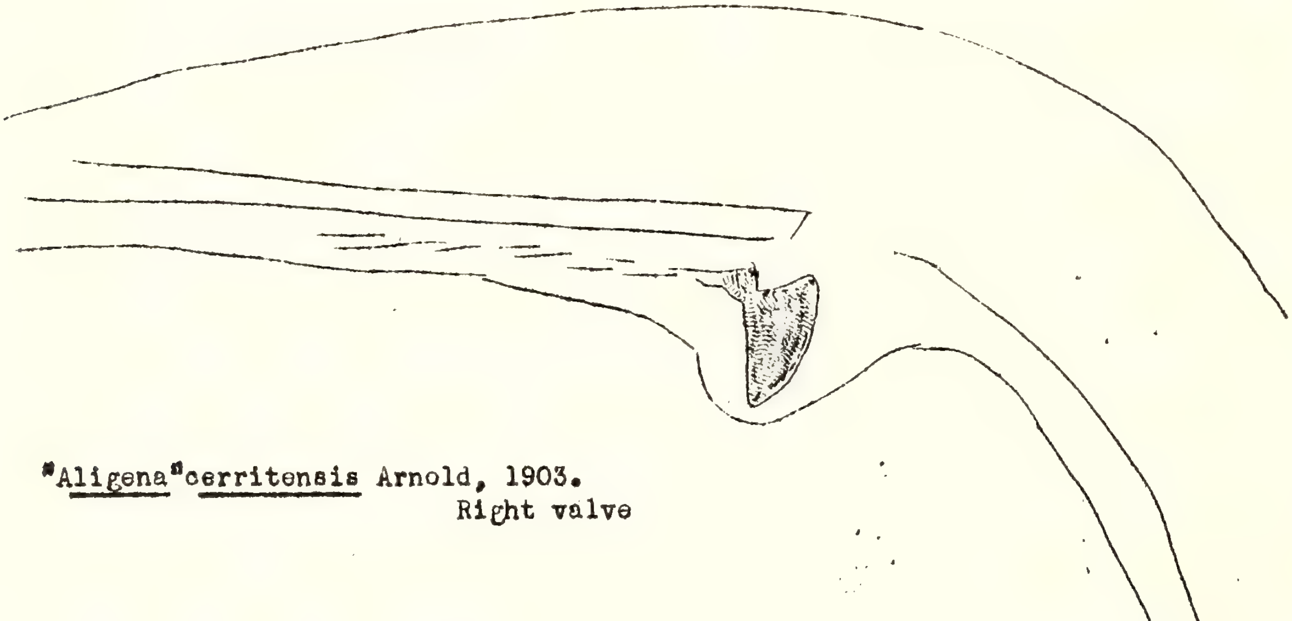
The following notes on this genus are by Tom Burch.

This genus was originally (1843) described as follows: " Testa aequivalvi, subaequilaterali, postice et antice clausa; cardine dente cardinale uno, sulco sub natibus longo, minime profundo." Two name, A. striata and A. laevis, were assigned to it, unaccompanied by figures or descriptions, but followed (1845) with characterization. Dall (1900) designated A striata as type of the genus and placed it in synonymy with Amphidesma aequata Conrad (1843) (Proc. Phila. Acad. Sci. vol.1 , p. 307, 1843).

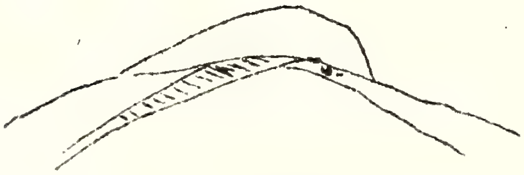
At the same time Dall recharacterized the genus as having " a rounded triangular inflated shell with only a single small anterior tooth under the beaks, separated by a gap from the surface of attachment, under the posterior dorsal margins, of an elongate internal resilium carrying a lithodesma. The pallial line is simple and the cardinal of the left valve is more feeble than the other."

Thiele has made *Aligena* a subgenus of *Montacuta*, Turton, 1822, and says of it " *Aligena* is von *Montacuta* nicht wesentlich verschrieden. Ligament mit einem verkalkten Teil, die vorderen Zahne konnen rudementar werden". The hinge of *Montacuta* is described by Dall as follows: " Anterior part of hinge provided in the right valve with a narrow lamina having a minute cardinal hook at the proximal end; left valve with a similar lamina on which the hook is less prominent or even absent; external ligament obsolete, amphidetic, leaving no trace on the shell; resilium strong, internal, posterior, seated on nymphs of which the right one is usually less strong; the distal portions og the laminae sometimes obsolete."

I have a camera lucida drawing by Dr. Myra Keen of a specimen of *Montacuta substriata* which is the type species of *Montacuta*, and also of the holotype of *Erycina balliana* which Dr. Keen believes is the only representative of *Montacuta* on this coast. Neither of those drawings shows the " minute cardinal hook" mentioned in the description of the genus. Either this "hook" is inconstant and thus unimportant or it was overlooked by the artist. Until I received the drawings of *Montacuta substriata* I had thought that *Aligena cerritensis* Arnold might actually be a *Montacuta* since it definitely does have a " narrow lamina having a minute cardinal hook at the proximal end" as can be seen in the accompanying drawing. However, the other hinge characters are not alike at all.



"*Aligena*" *cerritensis* Arnold, 1903.
Right valve



Aligena nucea Dall
Left valve

Aligena is known from the Pacific Coast of North America through three species which can be separated by the following key:

Anterior part of shell sloping abruptly down .... A. cerritensis
Anterior part of shell not sloping abruptly down
  Posterior portion of shell sloping gently down,
    left valve with a tooth ....A. nucea
  Posterior portion of shell sloping abruptly down,
    left valve edentulous ....A. redondoensis

Aligena cerritensis Arnold, 1903.

Paleo. & Strat. of San Pedro, Mem. Calif. Acad. Sci. vol.3, p. 138, pl. 13, fig.3, 1903.

A. cerritensis was described from the Pleistocene of San Pedro, Calif. and has been reported from La Jolla, Calif. to Magdalena Bay, Mexico (Dall, 1921) and has been collected at the Playa del Rey Pleistocene deposits by G. Willett. The shell resembles Acila castrensis in outline and size.

Aligena nucea Dall,1913.

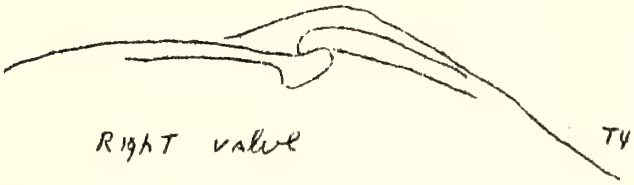
Proc. U.S. Nat. Mus. vol. 45, p. 597, 1913; ibid, vol. 66, p. 2, pl.28, fig.2, 1925.

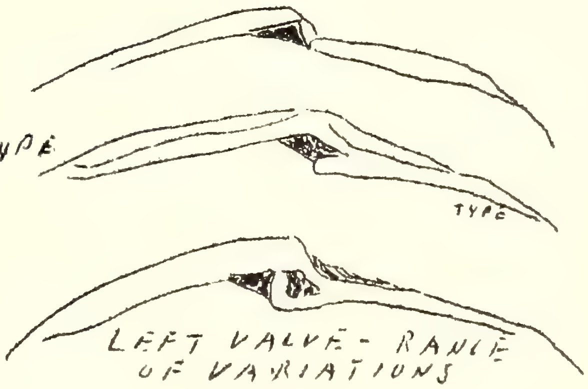
This was described from the Gulf of California. The shell was said to have the " beaks posterior, the anterior end of the shell shorter". Obviously the anterior end would have to be longer, if the beaks are posterior. The hinge of the left valve is described as having " a long strong narrow chondrophore with a small pustular projection in front of it". Between the chondrophore and the small tooth is a triangular socket for the reception of a tooth from the other valve. The chondrophore to which Dall refers is a little laminar plate ventral to the ligament. The A. nucea Dall in Keen's checklist of W.N. Am. Marine Moll., 1939 is based on two lots of shells dredged off La Jolla, Calif. and off Santa Rosa Island, Calif. which are Aligena redondoensis Burch and not A. nucea as identified by Dall.

Aligena redondoensis Burch, 1941.

Nautilus, vol. 56, p. 50, pl. 4, figs. 5,6,7.

This species lives in a very restricted habitat in the submarine canyon off Redondo Beach. The mollusk lives in mud mixed with some fine gray gravel. On all sides of this " gravel bed" the pure mud is barren of shells when compared to the rich fauna associated with the Aligena. Reference has already been made to the specimens from off Santa Rosa Island and La Jolla. The hinge of the right valve is fairly constant and is similar to that of A. aequata in that it has a single large tooth. The hinge of the left valve varies considerably, some specimens being similar to that of aequata . However, the lamina in the left hinge ranges from being practically obsolete to being pronounced and resembling a spoon shaped chondrophore. In the most extreme variant there is a rounded pit above the spoon-like lamina behind which is a narrow thickening resembling a tooth. (see accompanying figures).





"ALIGENA" REDONDOENSIS

Genus Sportella Deshayes,1858. Type. Psammotea dubia Deshayes.
Cardinal teeth present in both valves- Outline quadrangular- Beaks nearer posterior.

" Shell oblong, smooth, depressed, subequilateral; valves closed. Hinge narrow, with two unequal, diverging teeth in the left valve, one in the other; the lateral teeth are wanting. Muscular scars large, oval, nearly equal; pallial line simple. Ligament external." (Tryon).

Sportella californica Dall,1899. " Monterey, Calif." (Dall,1921).

[illegible] two [illegible]. The following note (Personal Comm. Sept. 1944) from Dr. Keen is very interesting " Sportella" californica is very obviously not a Sportella. Perhaps it represents an unnamed genus. So far I know of only two valves, one taken by Dall in 1870, the other by MacKenzie Gordon, both at Monterey. The outline somewhat resembles Pseudopythina, but the hinge seems to be different. "

Genus Anisodonta Deshayes,1858. Type. Anisodonta complanatum Deshayes.
Both cardinal and lateral teeth present- Cardinal teeth 3 in one valve, 2 in other.

Anisodonta is one of the many puzzles of the Leptonidae. The gills are like those of Thyasira and, contrary to the rule in Leptonacea, the incurrent opening though not developed into a siphon is complete and posterior.

Anisodonta pellucida Dall, 1916. " Monterey Bay, Calif. off Del Monte" (Dall).

Family CHLAMYDOCONCHIDAE

Genus Chlamydoconcha Dall,1884. Type. Chlamydoconcha orcutti Dall.

The generic description by Dall is entirely devoted to the characters of the animal. The shells are internal. The animal sluglike.

Chlamydoconcha orcutti Dall, 1884. " Monterey to False Bay, San Diego Co." (Dall).

" The shells are enclosed in two little sacs in the substance of the mantle. The umbones are close together, apparently connected by a brown gristle resembling an abortive ligament, and are nearly over the heart. The valves are about 10 mm/ long and 1 mm. wide, destitute of epidermis, prismatic, or pearly layers. There are no muscular or pallial impressions, no adductor , hinge or teeth. The embryonic valves are retained like two tiny bubbles on the umbones." (Dall).

Type locality, San Diego.

Collecting data: Mr. and Mrs. E.P. Chace report having taken this species in both Mission Bay, San Diego Co. and in Newport Bay. It is a sluglike amber brown animal. Mr. Morris Caruthers reported having taken a number of specimens in Newport Bay. H.N. Lowe had specimens collected in 1929 in Newport Bay.

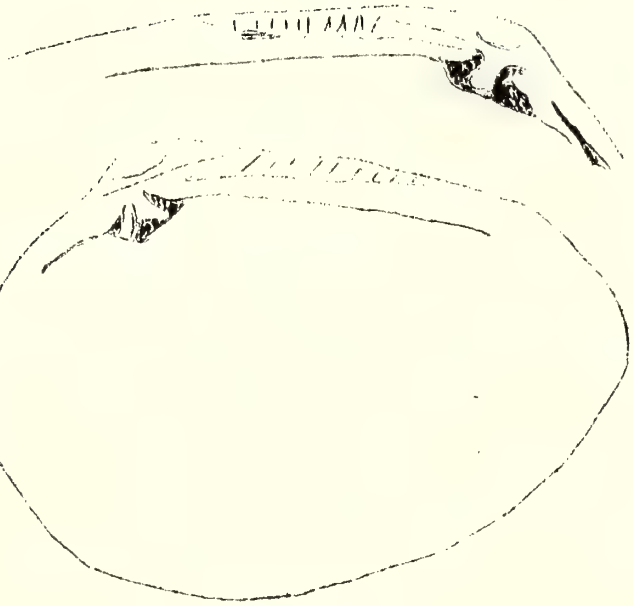
Correction and Additions

Minutes # 39, p 14 Cardita nodulosa off Catalina Island by G. Willett in 200 fathoms- not 50 fathoms.

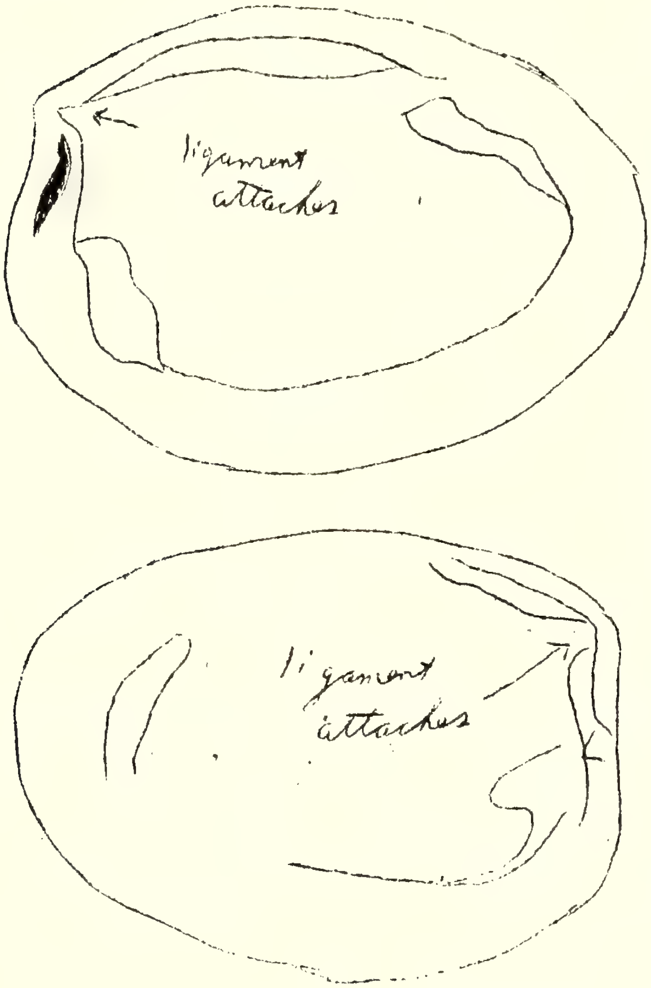
Minutes # 39- p 21- Thyasira trisinuata collected by Lewis in Frederick Sound , not Frederick Island.

Minutes # 39- p 22- Axinopsis viridis collected at Victoria, B.C. 5-15 fms. not as types 5015.

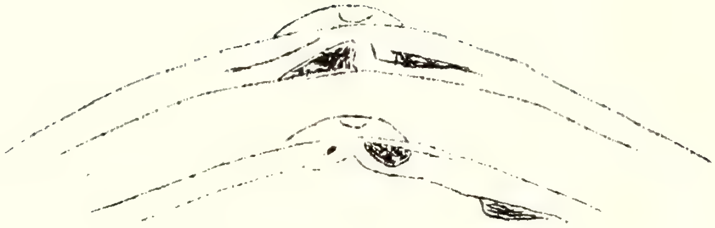
Minutes # 40- p 15- additional records of Rochefortia tumida Carp. San Diego (Hemphill); Mole Harbor & Rodman Bay, Alaska (Kate Stephens); 15-30 fms. San Diego (Dr. F. Baker); Ballard Beach, Seattle, Wash (Dr. F.Baker And additional records of Rochefortia aleutica Dall- 10 fms. Reef Point, Los Angeles Co. (A.M. Strong); Port Graham, Alaska (Dr. Fred Baker).



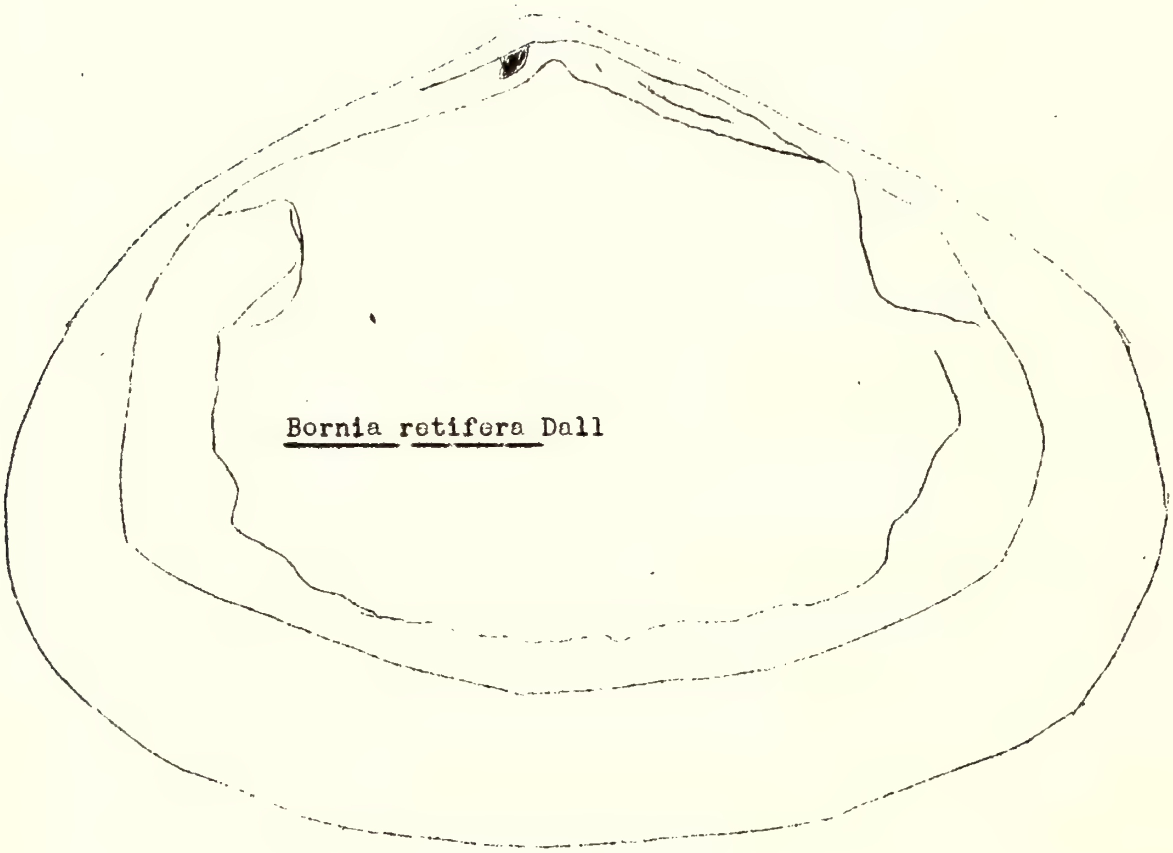
Turtonia


ligament attaches
ligament attaches

Serridens oblonga Carpenter



Bornia (from Keen)



Bornia retifera Dall

Additions- Corrections

Minutes # 37- p 14

Thracia challisiana Dall - Dredged by the Burches in 10 fms. off Monterey, Calif. in Aug., 1940. The following note from Dr. A. Myra Keen advises us as follows " I should identify it as Thracia challisiana Dall, perhaps a variety. We have a specimen from Monterey with a manuscript varietal name of Dall's, a specimen Mrs. Oldroyd had evidently sent to the National Museum for identification. However, Dr. Dall evidently didn't feel sure enough of its being a valid subspecies to publish the name."

Minutes of the October Meeting of the Conchological Club of Southern Calif.

The Conchological Club of Southern California met at the usual time and place sunday, Oct.1,1944 with 14 members and 3 visitors present. The visitors were: Virginia Bovee, 8931 Kittyhawk Ave., Los Angeles 43, Phone Or. 7-4066, Dorothy Boveem 4338 Raymond Ave., Los Angeles 37, Phone Ax. 16633, and Harold Ameeligh, 3855 Cimmaron St., Los Angeles .

We are glad to see new faces in our meetings and hope they will be with us again.

The membership committee accounted for the absence of Mr. and Mrs. E.P. Baker, as due to a broken heel which will probably keep him from work but may allow him to catch up on his shell work. We hope they will be able to be with us at the November meeting.

No other committee reports being offered, the study of our outlines lesson was taken up and much of interest reported.

Mr. George Willett substituted for Charles Allen who has not yet returned from a trip to the Hawaiian Islands. The meeting was then duly adjourned.

Effie M. Clark- Secretary.

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Lieutenant V.D.P. Spicer of the U.S. Navy and a member of our club for years is now stationed at Berkeley with the U.S.N. V-12 Unit at the University of California. His present address is 401 Vermont Ave., Berkeley. " Just last Sunday while visiting with Allyn Smith he said he was going to ask you to put me on the mailing list of the Minutes so he would not have to loan me his so often. He lives just down the road four blocks from me in Berkeley.".

Henry A. Rothamel, 3903 Sinclair Lane, Baltimore 13, Maryland. " I would like to have my name again placed on the mailing list to receive the minutes of the Conchological Club of Southern Calif. I find much interest in them. Enclosed is a few dollars to help with the postage and printing."

Professor E.P. Cheatum, Professor of Biology, Southern Methodist University, Dallas, Texas. " I have been negligent in writing you and telling you that I enjoy and appreciate very much receiving the club minutes of your organization"

Kerckhoff Marine Laboratory, Corona del Mar, California. " We would be glad to have members of your club visit the laboratory when they are in the Newport region. Bradley T. Scheer, in charge."

A. Sorensen, 247 Granite St., Pacific Grove, Calif. " Miss Edna Wilson of San Diego sent me a new swimming crab that had washed up on Mission Beach, and Mr. Roy L. Morrison writes me that he found one in Mission Bay. At the same time our Monterey purse seine boats got three in their nets out to sea. One of these is now in the U.S. Nat. Mus. and two in the Hopkins Marine Sta. The crab is not described in Waldo Schmidt's Marine Decapoda of California, but Rath--bun's Cancroid Crabs reports it from Panama south. It is called Euphylax dovii Stimpson. Schmitt writes me that the only live one he has seen was at Cocos Island. Some freak ocean current must have brought them thousands of miles north."

Professor J. Harlan Johnson, Colorado School of Mines, Golden, Colorado, Dept. of Geology. We are happy to add Professor Johnson's name to our mailing list.

Ernest N. Wilcox, 1738 Johnson Ave., San Luis Obispo, Calif. " I find the shell club reports more and more interesting. It is a good job you are doing". And our member from the San Luis section promises to keep us advised of his own collecting records. We are glad to know that he is well and active.

Professor A.S. Duckworth, Southeast Missouri State Teachers College, Cape Girardeau, Mo. recently mentioned an interest in Foraminifera and I mailed him a little bag of sand from one of our dredge hauls off Redondo Beach. He sent back a clever little mount with some 30 odd species under the glass in the slide. Members interested in micro forms should correspond with him by all means.

Minutes of the Long Beach Shell Club

The Long Beach Shell Club met in the Childrens Room of the Main Public Library, Sept. 8, 1944 at 2:30 P.M. 19 members and 6 visitors were present. Mr. Ralph Bormann, the president, called the meeting to order. Mrs. Bormann reported Mr. E.P. Baker's accident caused by a fall at work. He will be kept at home for some time and will appreciate calls and letters from his friends, 417 S. Downey, Downey, Calif. A recent book by Dr. Maxwell Smith " Panamic Marine Shells" brought by Miss Lena Higgins was discussed. Mrs. Jean Wilkins, curator of the Agassiz Club offered to open the exhibit to the public on saturday afternoons twice a month if the shell club felt it worthwhile. Miss Julia Ellen Rogers moved the club support Mrs. Wilkins in her project. Motion carried. Mr. S.G. Skinnner reported that Mrs. McLean, 476 Almond Ave., 677-151, has invited the club members to see her large collection of things made of shells. Mrs. Frank Eastman wore her handsome set of jewelry made of cowry shells recently brought to her from the south seas by her Merchant Marine son.

Our club sponsor, Miss Julia Ellen Rogers, gave an informal talk, which she called " Shell Gathering on Many Shores". Adventures and personalities encountered while writing her manual " The Shell Book", made a most interesting story. At Woods Hole the studies of east coast shells were made under the guidance of the laboratory veteran, Virgil Gray. A week spent with friends at Patchogue, Long Isla gave first hand knowledge of harvesting the oyster crop, close to the New York market.

The richest finds from the standpoint of beautyand variety were waiting, after stormy weather, on the sandy shores of Sanibel Island, on the west coast of Florida. From May to July, Miss Rogers was with the Dimmock family, in the houseboat " Irene", built to furnish the comforts and necessities of life to the photographer, who put in his third and final season, to get the optimum series of pictures of the leaping tarpon. The speaker was at the other end of the line, when 175 of the " Silver Kings" took the hook, during the season.

In California, the winter of 1906 brought memorable shell collecting trips with the Oldroyds, days in their great collection, and in those of Herbert Lowe, the Zechs' and Miss Sarah Monks. The " Iconica Conchologia" of Reeve was ontained for the Los Angeles Public Library by Miss Rogers contacts in the American Museum of Natural History in New York City. In the great collection of this institution the book was written. Since 1908 " The Shell Book" has been continuously issued.

From her story, we glean that hard work has been lightened by thrilling adventures and meeting with great personalities. Her interest is that her book still lures old and young to the beaches.

Mr. E.W. Ulrich brings to each meeting select specimens from his choice collection. Outstanding this time were two lovely specimens of Epitonium pretiosum from China.

The members were glad to welcome Mr. and Mrs. John Q. Burch . The meeting was then dismissed by Mr. Bormann.

The next meeting of the club will be held at 2 :30 P.M. on Nov. 12 at the Main Public Library, Long Beach, Calif. The speaker of the day will be Professor G.E. MacGinitie of the California Institute of Technology. All persons interested are cordially welcome.

Grace Stillwell, Secretary.

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Dr. Hubert G. Schenck, of Stanford University, now serving as Major Schenck in the United States Army is now overseas.

Mr. and Mrs. E.W. Boerstler, P.O. Box 484, Corona del Mar, Calif. or 1010 Ocean Blvd., call attention to their new address above (formerly Vista,Calif.) and invite members to visit them when in their vicinity.

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E.P. Baker, 417 S. Downey Ave., Downey, Calif. " Just a note to let you all know that in an accident last wednesday, I broke my heel, and will be laid up for some time. The way the doctor talks it will be months before I am out again. Hope in this he doesn't know what he is talking about. I'll miss the club meetings, but tell all the folks hello for me." Tough luck. Ned If we had some gas coupons you might even have a visitor.

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We are in receipt of several new publications:
" A New Shipworm From the Panama Canal" by Paul Bartsch, Smithsonian Miscellaneous Collections, Vol. 104, No. 8. The species described and well figured is *Bankia (Bankia) canalis* Bartsch.

" Distribution and Variation of the Hawaiian Tree Snail *Achatinella apexfulva* Dixon In the Koolau Range, Oahu" by D'Alte A. Welch, Smithsonian Miscellaneous Collections, Vol. 103, No.1.
This is a very thorough work consisting of 236 pages with 12 pages of plates. The subject is of particular interest not only to those interested in the group but to all concerned with problems of variation to species.

" Mollusca" Vol.1, No.1. This is the first issue of a new periodical devoted to the interests of shell collectors. Those interested will address Paul H. Reed, Publisher and Editor, Box 267, Tavares, Florida.

" Pleuroceridae of the Great Basin" by Calvin Goodrich, Occasional Papers of the Museum of Zoology, University of Michigan, Number 485, May 1, 1944.
Two new species are described, *Goniobasis laurae* and *GOniobasis interioris*. They are of particular interest to us because *laurae* is found in the springs of Grasshopper Valley, Lassen County, Calif. and both are taken from the springs and wells of western Nevada. It is also a little humiliating to those of us who have collected in Lassen County and failed to return with specimens of this species.

****

Dr.Harald A. Rehder, Associate Curator, Division of Mollusks, Smithsonian Institution, Washington, D.C. " I received the last number of the Minutes of the Conchological Club of Southern California a few days ago and have read it with interest. The treatment of the family Lyonsiidae and related groups will be of great help to those of us who have to work with the West Coast mollusks.
On page 21 you ask what the name of the large snail from Singapore is. It is the African *Achatina fulica* Ferussac. No doubt you have already been informed of the fact, possibly by Mr. Eyerdam from whom we have in our collection some specimens. We also have it from southern Siam."

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W.P. Cook, 2966 Union Ave., San Diego 1, Calif. Our good friend Cook is a genuine worry. It is impossible to get anywhere near even with our exchanges. We send him a few nondescript Conus etc. and here is a regular freight shipment of the finest and biggest Avocados you ever saw or tasted. He mentions that shell " Sent that yellow *Argonauta* to the National Museum. Dr. Bartsch said it was only a colored variety of *argo* and not *bottgeri*. That leaves me with 5 species instead of 6. Where can I get a *bottgeri*?

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